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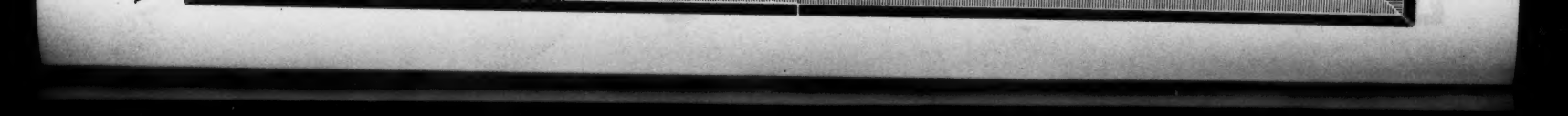

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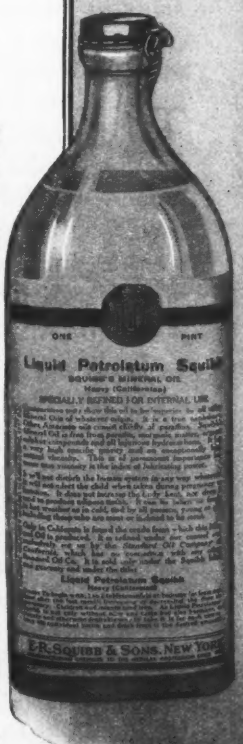

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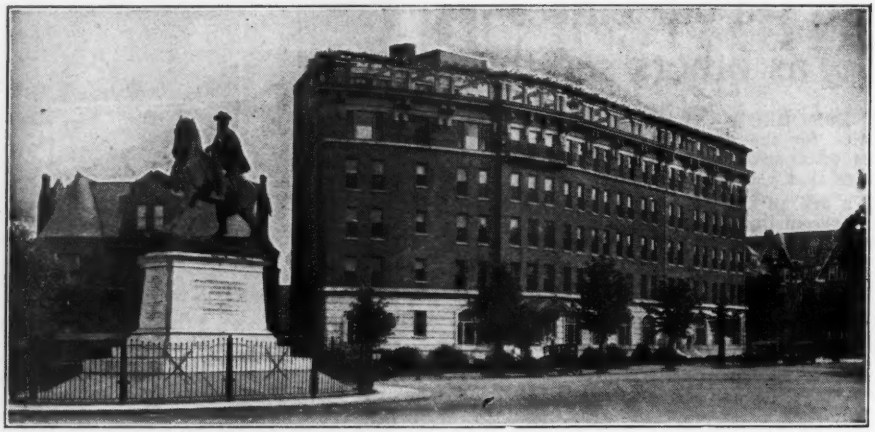

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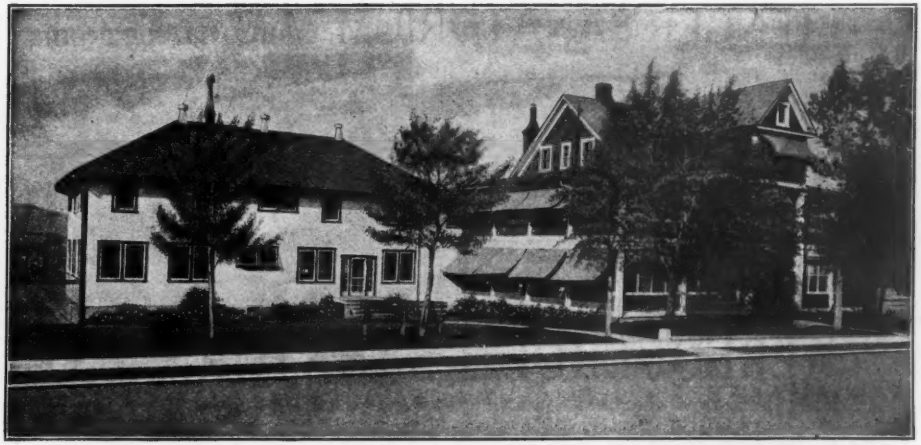

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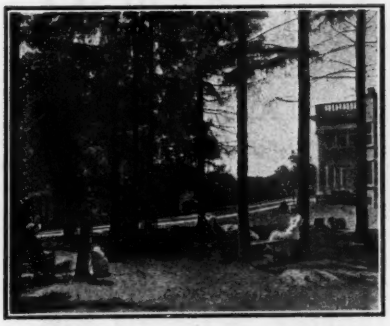

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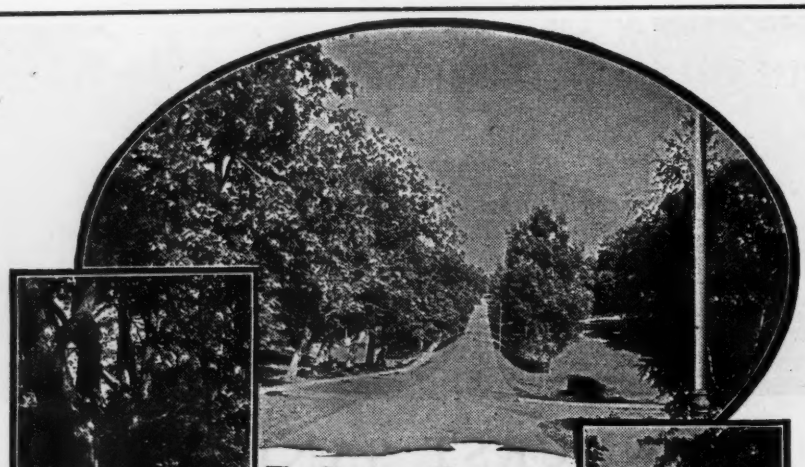

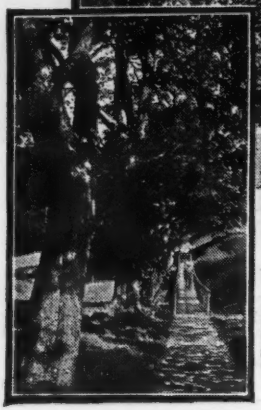

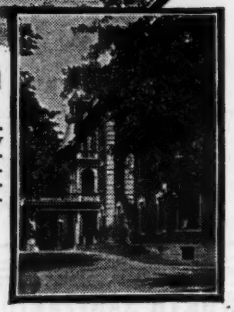

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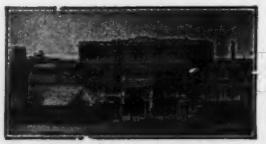

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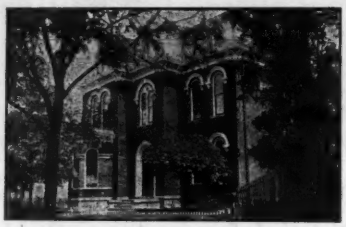

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Volume XVII JULY 1924 Number 7

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

THE CREATININ TEST FOR RENAL FUNCTION*

By RALPH H. MAJOR, M.D.,
Kansas City, Mo.

The introduction of renal functional tests is the greatest advance that has been made in the history of kidney disease since Richard Bright described nephritis. The study of renal function has taught us that the majority of men with high blood pressure do not have Bright's disease. It has taught the surgeon when to operate boldly and when to proceed with extreme caution. And with the imperfections the study of renal function still has, it is at once the admiration and despair of the cardiologist, who is still seeking some method of determining the functional ability of the heart.

The history of the development of renal functional tests is filled with both success and failure, but it is a history of continued progress. The brilliant researches of Schlayer, who thought his method was sufficiently delicate to differentiate vascular from tubular nephritis, are now perhaps more interesting historically than because of any widespread application. But this work gave a great stimulus to the study of renal function and has been productive of much clear thinking.

A great number of tests for renal function have been proposed from time to time. Many of these have been discarded as inadequate, others have proved of practical value, subject to certain limitations, while a great many more are in use, awaiting or undergoing the acid test of experience.

The use of phloridzin as a test of renal function has fallen into disuse, although it still has its champions. Potassium iodid was introduced by Dyce Duckworth as a test of renal function. Its use was revived by Schlayer and more recently by Linder, in 1922. Linder describes it as a very satisfactory test, but one requiring a twenty-four-hour test period. Indigo carmin has been used for many years, but with increasing infrequency, although Thomas, in October, 1922, states that if he had to select one test to the exclusion of all others, he would select indigo carmin.

The use of urea as a functional test has been the subject of several papers by Addis and by MacLean. Critics of the urea methods have pointed out that the ideal substance for estimating the functional activity should not be subject to extrarenal influences. The urea concentration of the blood, as is well known, may be greatly increased as the result of protein destruction or excessive protein intake, in the complete absence of kidney lesions.

The hippuric acid test advocated by Kingsbury is based on the physiological activity of the kidney in synthetizing ben-

*Read in Section on Medicine, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

zoic acid and alanin with the formation of hippuric acid. Kingsbury describes this as a very satisfactory test provided the patient's diet is carefully regulated and kept constant before and during the test. Morgulis found this method of value, but states, however, that "the test carried out with the same patient does not always yield quantitatively similar results" and concludes that "clinically, the method will in all probability not find extensive application or favor, because it involves much work."

The most widely used test for renal function in this country is unquestionably the phenolsulphonephthalein test introduced by Rowntree and Geraghty in 1910. This test, of very great value, particularly in surgical cases, has very definite limitations in medical cases. It was early pointed out that it often failed to differentiate between cases of chronic nephritis and cases of cardiac decompensation with chronic passive congestion of the kidneys. Many workers with this test have also noted certain individuals with no evidence of either cardiac or renal disease, who nevertheless show a subnormal excretion of phenolsulphonephthalein.

During the past year, while studying the subject of renal function, a low excretion of phenolsulphonephthalein has been observed in individuals who had a normal blood chemistry, whose blood pressure was normal and whose urine contained no albumin, sugar, casts or other evidence of renal impairment. Further tests in these normal controls showed at times a normal excretion of phenolsulphonephthalein, at other times a marked diminution. Six normal individuals showing a two-hour urinary excretion of 35 to 40 per cent showed three and four days later an excretion of 75 to 80 per cent following intravenous injection.

These observations suggested the possibility of a destruction of the dyestuff in some part of the body and called to mind the observation made several years ago by Kendall that when liver tissue and phenolsulphonephthalein were mixed together outside the body, the dyestuff was rapidly destroyed. This possible role of the liver in influencing the rate of phenolsulphonephthalein excretion was investigated in a series of experiments.

In the first series of experiments, twelve rabbits were used. These animals were first injected intravenously, then subcutaneously, then into the pleural cavity and lastly directly into the liver itself by means of a long, slender needle inserted just under the costal margin with the tip directed towards the diaphragm. At the conclusion of the experiment the animals were killed, the liver was examined for evidence of puncture and the kidneys were studied grossly and microscopically for evidence of renal lesions.

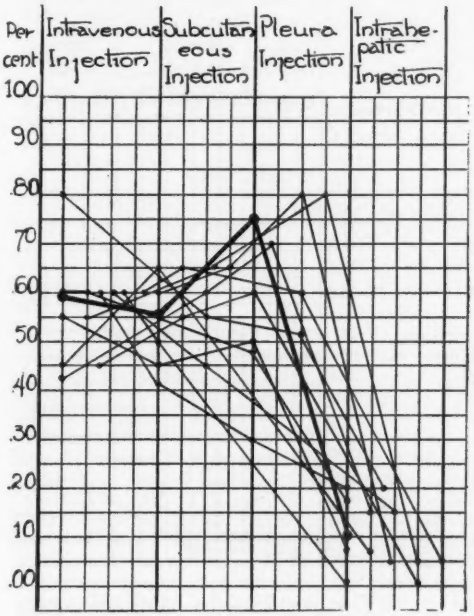
A brief summary of the results of these experiments shows that while the average two-hour excretion is approximately the same when the dye is injected intravenously, subcutaneously or into the pleural cavity, the excretion after direct injection into the liver is much decreased, the average being only 15 per cent of that observed following the other methods (Fig. 1). Greater individual variations were observed in some instances, one animal excreting twenty-four times as much after intravenous injection as it excreted following intrahepatic injection.

In a second series of experiments, the animal was etherized lightly, the abdomen opened and the dyestuff injected directly into the portal vein. Five rabbits were injected in this fashion, and as controls five animals were injected directly into the inferior vena cava under identical conditions. In this set of experiments it was found that injection of the dyestuff directly into the portal vein, which allows it to pass through the liver, is followed by a very low phenolsulphonephthalein excretion, while injection into the vena cava is followed by a very high output of the dye.

These experiments emphasize the great affinity of the liver for phenolsulphonephthalein. In the majority of patients, the dyestuff when injected subcutaneously or intravenously, probably passes largely through the kidneys, which take it from the circulating blood and excrete it in the urine. Our experiments suggest, however, that if any considerable por-

tion of the dyestuff in the blood stream passes through the liver, this organ may take it from the blood and destroy it. Such a process may be a marked source of error in drawing conclusions from phenolsulphonephthalein tests.

During the past eighteen months I have been interested in the possible use of creatinin in the study of renal function. This substance is apparently an end-product of protein metabolism. It is excreted



Results following injection of Phenosulphonephthalein by four different methods Excretion at end of 2 hours 12 Cases

by the normal kidney with great ease, and the excretion is remarkably constant in the same individual for definite periods of time.

The estimation of creatinin by Folin's method is simple, accurate and can be carried out in ten minutes. Any laboratory possessing picric acid, sodium hydroxide and a colorimeter is equipped for making creatinin determinations.

Up to the present, all of the creatinin obtained was made from urine by a laborious and expensive method, and the retail price has varied from $4 to $5 per gram. Such an expensive product has not naturally commended itself to either clinical or extensive experimental use. So our first problem was obviously to seek some cheaper source of creatinin.

For several months attempts were made to prepare creatinin from beef extract and eventually a fairly successful process was worked out. About this time I learned of a by-product obtained by the Valentine Meat Juice Company in the preparation of meat juice, which contained large quantities of creatin. I secured several pounds of this material, which they sold as fertilizer, and on examination found it to contain from 40 to 60 per cent creatin, which could be easily extracted and by autoclaving was converted to creatinin.

Later I learned that Dr. Graham Edgar, of the University of Virginia, was preparing creatinin from this by-product and much of the creatinin used in this work was kindly supplied by him. At the present time the Eastman Company is manufacturing creatinin, which is sold for 9 cents a gram. So the economic aspects of creatinin seem to be solved.

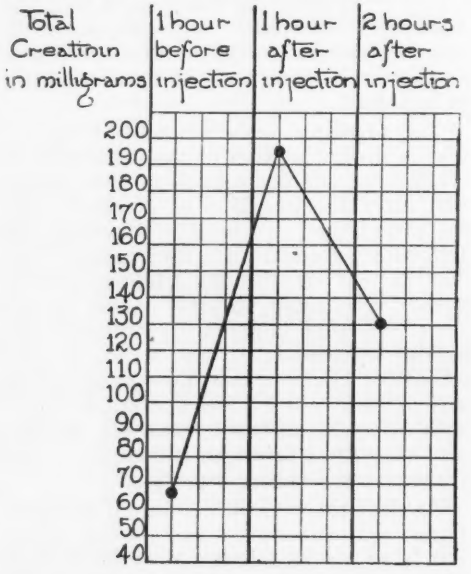
The principle underlying the creatinin test is the calculation of the creatinin excretion for definite periods of time before and after the injection of creatinin into the circulation. In most of the tests the following procedure has been carried out: The patient empties the bladder and the urine is collected for the period of one hour. He then is given 0.5 grams of creatinin intravenously, the urine is collected for one hour and then again at the end of two hours. The excretion of creatinin for the first hour and for the second hour after injection is compared with the excretion before injection.

At first the creatinin solution was prepared and autoclaved just before using, but later we found that it could be kept in a buffer solution (primary potassium phosphate 27 parts, secondary sodium phosphate 73 parts, pH. 7.2) ready for

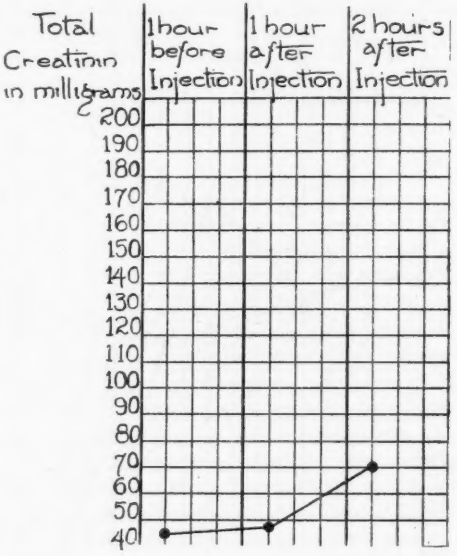
instant use. Further observations showed that instead of hourly periods, one-half hour or fifteen minute periods could be taken. This latter modification permits its use in genito-urinary cases, since the test can be carried out in forty-five minutes or perhaps less.

We also find that the test can be satisfactorily carried out with 0.25 grams of creatinin and also by intramuscular injection. A glass of water is given after each voiding to insure diuresis, and all collections should be promptly made.

In all, we have carried out in the University of Kansas Medical Clinic more than two hundred tests on normal individuals, in various non-renal diseases, in diabetes mellitus, in essential hypertension, in chronic nephritis and in experimental nephritis. In this series were thirty-three cases of chronic nephritis, thirty cases of essential hypertension, eighteen cases of diabetes mellitus, twenty-five normal individuals and one hundred and thirty-four patients suffering from various diseases with no renal involvement. The curves charted from these patients show a characteristic type of curve for normal individuals and non-renal patients, and an equally characteristic curve for chronic nephritis. All the non-renal patients, after the injection of creatinin, respond with a sharp rise in the total excretion, the excretion during the hour following the injection being at least twice and usually three times the amount excreted in the hourly period preceding injection (Fig. 2). Patients with chronic nephritis show no such rise (Fig. 3) and may show an actual fall. This



Typical Normal Response



Typical Nephritic Response

latter observation suggests that the kidney, in chronic nephritis, may have a partial paralysis, as it were, of creatinin excretion when an excess of creatinin is introduced into the circulation. There is also both clinical and experimental evidence that this fall may be an indication of the severity of the disease process.

Our experience with this creatinin test during the past eighteen months has convinced me of its value. The test is easy to carry out and no patient injected has shown any untoward symptoms or reaction. It is very desirable that more tests be carried out and more data obtained. The acid test of experience must be ap-

plied, but let me emphasize again, the urine must be collected promptly and the bladder must be completely emptied at each collection.

BIBLIOGRAPHY

Edgar, G.: Preparation and comparison of standards for estimation of creatin and creatinin. J. Biol. Chem., 1923, lvi, 1.

Edgar, G., and Hinegardner, W. S.: Preparation for creatinin from creatin. J. Biol. Chem., 1923, lvi, 881.

Kingsbury, F. B.: Benzoate test for renal function. Arch. Int. Med., 1923, xxxii, 175.

Linder, G. C.: Excretion of potassium iodid in urine in health and disease. Quar. J. Med., 1922, xv, 227.

Major, R. H.: Use of creatinin as test for renal function. J. A. M. A., 1923, lxxx, 384.

Major, Ralph H.: The influence of the liver on phenolsulphonephthalein excretion. J. A. M. A., 1923, lxxxi, 1362.

Morgulis, S., Pratt, G. P., and Jahr, H. M.: Hipouric acid synthesis as a test of renal function. Arch. of Int. Med., 1923, xxxi, 116.

Thomas, B. A.: Comparative values of indigo carmin and blood biological tes's. J. A. M. A., 1922, lxxix, 1387.

DISCUSSION

Dr. Louis Hamman, Baltimore, Md.—We already have a good deal of information concerning creatinin in the blood. I was much impressed by a recent article by Feinblatt showing a remarkably constant association of nephritis with creatininemia.

During the past fifteen years there has been so much discussion of functional tests in nephritis that the practitioner often becomes discouraged and feels that he is poorly equipped to lend adequate aid to patients with kidney disease. It is important to emphasize over and over again that functional tests are of value only as a supplement to careful bedside study and again that the most helpful functional tests are the simplest kind of observations. If a patient's condition were estimated solely on the basis of functional studies without reference to the rest of the clinical symptoms we should be led into the grossest error. The most helpful functional studies that can be made are long-continued observations upon fluid intake and urine output and the specific gravity of the urine under varying conditions. These observations are a part, or at least should be a part, of the routine investigation of every patient suspected of having kidney disease. As simple as they are in method and interpretation they yield more valuable information than all other functional tests. However, the more elaborate functional tests are not to be despised, for added to these simple tests they give us a still better insight into the working power of the kidney. Occasionally they are indispensable to a proper understanding of the patient's condition. Under such circumstances their value depends upon an irreproachable technic and a proper interpretation of the result. A physician should learn to use one or two functional tests and thoroughly familiarize himself with what they actually mean. In this way he will get more help even from an inferior test than he would from a better test poorly performed and falsely interpreted.

Dr. James S. McLester, Birmingham, Ala.—One criticism which is frequently offered upon all tests of kidney efficiency is that since this organ has several apparently independent functions any single test is apt to give an index of impairment solely as regards one function. Still, this does not prevent our availing ourselves in every case of several methods of measurement and then drawing our conclusions from a sum total of the results. This seems to be the only reliable method of estimating kidney efficiency.

Dr. Major has told us of what I believe to be the best single renal test.

As a test substance, creatinin possesses certain distinct advantages. It is a chemical body with which the kidney is accustomed normally to deal, and while the precise manner in which it arises during protein metabolism is still a matter of doubt, it is known, nevertheless, that the same individual always produces the same amount of creatinin. Also it is not destroyed in the body, but is excreted unchanged by the kidney. These qualities make of it a good substance for testing the excretory capacity of the kidney.

We have recently used the creatinin test in a few cases and have obtained curves similar to those shown by Dr. Major. There are, however, two questions about which I am uncertain and which I should like to ask Dr. Major in closing to discuss.

We know that in kidney disease of moderate extent the creatinin of the blood is not increased, and that it is only when danger is imminent that this substance rises and rises rapidly, which would indicate that it is only the greatly impaired kidney which finds difficulty in excreting creatinin. I would like to ask what Dr. Major thinks of the influence of this fact upon the value of the test.

Also, does the administration of creatinin even in small amounts do harm to the man with a sick kidney? I think not, but this is a question which we should endeavor to answer clearly before advocating the general use of this promising test.

Dr. Major (closing).—One of the most interesting features of creatinin excretion to me is the difference between the way the normal and the diseased kidney excrete it. Most of my friends who were in the laboratory at the time I was beginning this work expressed the opinion that because creatinin is excreted so easily by the normal kidney, it would be of no value as a functional test until the kidney had practically stopped excreting. The results of this test do not bear out that contention. While the diseased kidney may be able to continue excreting constantly a small amount of creatinin, it is unable to respond to the strain produced by a great increase of the amount in the circulation.

However, I wish to hear the results of thousands instead of hundreds of determinations by this method.

A STUDY OF THE SYMPTOMS OF ACHYLIA GASTRICA*

By BRYCE W. FONTAINE, M.D.,
Memphis, Tenn.

The increasing tendency on the part of some clinicians to discard the use of the stomach tube as a routine diagnostic measure, and to employ it only in the presence of gastric symptoms, has suggested a review of the symptoms in the last 100 cases of achylia gastrica in my private practice.

In this analysis many cases presented symptoms suggesting an achylia, but none were so typical that they could not have been caused by other conditions, either within or outside the stomach. Many patients in the series presented no symptoms which would, in even a remote way, lead to implication of the stomach.

These are routine medical cases in which it was proven that achylia gastrica was the primary condition, as those cases due to, or associated with pernicious anemia, gastric cancer, pulmonary tuberculosis and syphilis were ruled out.

In this study one is first impressed by the extreme age limits, 21 to 74 years, and the greater frequency after the fourth decade. It is also interesting to note that 57 per cent of the cases were females.

The symptom occurring in the greatest number of cases was loss of weight in 44 per cent, which ranged from five pounds to fifty pounds. In some the loss was rapid over a period of a few weeks; in others it was gradual, extending through many months. It was apparently not attributable to any other cause.

The symptom next in importance, in 42 per cent, was malaise or loss of strength, varying from slight fatigue to marked asthenia.

Closely associated with these symptoms was a lowering of the blood pressure, 41 per cent showing hypotension. These low systolic pressures ranged from 85 to 112, in each case being lower than the normal standard for the individual's age. The mean and diastolic pressures showed the normal relation to the systolic.

The condition of the bowels was noted as regular in 51 per cent, constipated in 40 per cent, and loose in 9 per cent. When diarrhea was present it developed in a late stage of the achylia, and was always associated with a loss of weight and strength. It was rather surprising to find so few cases, as we had expected to find it occurring with greater frequency. In all cases, the diarrhea was of a severe type, but proven gastrogenic, as careful and repeated study of the stools ruled out the possibility of a parasitic infection.

Pain in the limbs, joints and muscles was a most important symptom in 32 per cent. This symptom, too, was often accompanied by loss of weight and strength. It is difficult to explain this last group of symptoms as being definitely dependent upon the gastric disorder. The most probable explanation is that they were due to focal infections which were found in 32 per cent of the cases, in the teeth in 26 per cent, in the tonsils in 4 per cent, and in the gall bladder in 2 per cent.

Pain, cramping and tenderness over the epigastrium occurred in 31 per cent. In many cases the pain was typical of duodenal ulcer, occurring several hours after meals, and promptly relieved by food. In others, cramping and colic were the outstanding symptoms. Four cases showed the incisions of former appendectomies or cholecystotomies without relief of symptoms, as the organs explored or removed were doubtless normal, and in no way responsible for the pain. In all cases where pain was a leading symptom the possibility of its being due to coincident duodenal ulcer, gall stones or kidney stone was ruled out by the careful routine radiographic study.

Headaches were frequent, occurring in 20 per cent of the cases. This headache was usually of great severity, but it did not in any way resemble migraine, either in character or location. This symptom appeared most often in those cases associated with focal infections.

In 15 per cent of the cases visible evidence of anemia was present, in paleness of the mucous membrane and pallor of the

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skin. Total blood counts were made in all cases. The anemia was distinctly of the secondary type, severe in 5 per cent of the cases, moderate in 8 per cent, and slight in 2 per cent. In no instance did the blood picture correspond morphologically to pernicious enemia, nor could the anemia have been caused by latent gastric cancer, as careful and repeated radiographic studies excluded the possibility of a growth's being overlooked.

Dizziness and vertigo were present in 8 per cent. When this symptom occurred there was an accompanying constipation, and probably the bowel condition, and not the achylia, was responsible.

Six per cent of the cases showed a definite arthritis and in each there was a focal infection. I do not believe that the achylia was responsible for the arthritis, but rather the coincidence of diseased teeth or tonsils.

A rather interesting symptom noted in 5 per cent of the cases was soreness of the tongue. In some there was a burning sensation involving merely the tip of the tongue or sometimes the entire edge; in other cases, there was definite redness with soreness and burning. It is not possible to say whether this was produced by the achylia or whether it was a glossopyrosis as described by Beall.

In marked contrast to the experience of VanderHoof was the rarity of spinal cord symptoms in our cases. In a recent article he reports cord involvement in about 22 per cent of his cases of achylia gastrica. In all of these cases the pupils were normal and there were no sensory symptoms. The reflexes were absent in 2 per cent, feeble in 4 per cent, and in none were they exaggerated. It is doubtful if the alteration of the reflexes in such a small number is more unusual than one would find in a series of 100 normal individuals. With these findings our experience has been that combined sclerosis of the cord does not occur with unusual frequency in cases of simple achylia gastrica, and when it does occur the achylia is most likely associated with or is a symptom of pernicious anemia.

SUMMARY

In analyzing the symptoms of 100 cases of achylia gastrica, occurring in a routine practice of internal medicine, it is observed that while the symptoms of loss of weight and strength, pain and tenderness, cramping and discomfort in the abdomen, accompanied by low blood pressure, are frequently present, they alone are not diagnostic of achylia gastrica and could be caused by other extra- and intra-gastric conditions. The reliability of these symptoms is also greatly lessened because in 21 per cent of the cases of the series absolute achylias existed in the absence of any single symptom that could have been referred to the gastro-intestinal tract.

Therefore, the diagnosis of achylia gastrica cannot be made from the history, from a study of the symptoms, or from a radiographic study, but it is absolutely dependent upon an analysis of the gastric contents after a suitable test meal, and it will frequently be overlooked unless this analysis is made a routine part of every general examination.

The presence of an utter achylia should always be confirmed by a fractional analysis according to the method of Rehfuss, and it should be followed up by subsequent analyses at regular intervals.

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DISCUSSION

Dr. G. C. Mizell, Atlanta, Ga.—Achylic states, more often present than the real disease of achylia gastrica, may be divided into several groups: first, those that we call the normal achylias. Whether such a condition exists I do not know, and I do not think any one else does, but it is recognized as being present in patients who are considered normal and who present no symptoms. Second, the physiologic achylias who have no digestive agents in their gastric secretion as a result of fear, worry, anxiety and such mental states; third, reduced states such as occur in fever and senility; fourth, the pathologic conditions of the glandulars, which may be subdivided into primary cell atrophy such as occurs from infections and secondary cell atrophy such as we find in atrophic gastritis; fifth, another group of which we know nothing, the so-called endocrine disturbances.

With this division before us we can well agree with Dr. Fontaine that there is no pathognomonic symptom or set of symptoms. Neither does a physical, x-ray examination or history assist us in making a diagnosis. The mouth symptoms which are sometimes present are interesting. This was studied by Dr. Thomas Brown eight or ten years ago and reported by him, in connection with gingivitis and glossitis, associated with a

study of the digestive agents in the saliva and in the stomach contents. Dr. Brown's results as far as showing any association with so-called gingivitis and stomatitis were negative. In my observation, this symptom occurs only on a low protein diet. This can be shown by increasing the proteins when there is an immediate clearing up of the gingivitis, stomatitis and glossitis. I do not mean to say that the low protein diet is the cause of this condition, but it is certainly associated in those individuals who are on a low protein diet, and especially in achylia gastrica.

The association of achylia gastrica with pernicious anemia has been very interesting to me for some years. Notwithstanding the fact that the Cabot series, I believe, show that 7 per cent of the cases have a free hydrochloric acid, others, including Snyder of the University of Minnesota, have never seen such a case. There is some reason for believing that achylia gastrica is one of the first pathologic findings in pernicious anemia.

I wish to commend Dr. Fontaine for his plea for thoroughness in examination. We make many examinations which prove of no value except in their negative results, but if we discard these examinations we shall frequently fall into error.

Dr. A. L. Levin, New Orleans, La.—Dr. Fontaine, in my opinion, is unquestionably defending a very strong point in favoring the use of the stomach tube as a routine of every general examination by the general practitioner.

Achylia gastrica is a very puzzling problem in gastric pathology. We often see individuals with achylia who have practically no discomfort whatever, then again others who suffer greatly. The etiology of this gastric disturbance is not well understood.

Faber claims that toxic action from any infection, especially intestinal, is liable to damage the stomach as it damages other glandular organs. It may act directly or indirectly on the secretory apparatus of the stomach and in time produce irreparable lesions. Chronic achylia is also found in 50 per cent of cases of exophthalmic goiter and polyarthritis.

Beck and McLean, in 1919, also lay stress on focal and systemic infections and, in their opinion, the disturbance of the glands of internal secretion invariably associated with achylia gastrica are also the result of chronic infection and not the cause of achylia.

Sajous, however, explains the etiology as follows: The toxemia may produce achylia through the adrenals in two ways: (1) the increased production of adrenalin causes a constriction of the arterioles in the stomach wall and thus inhibits its secretory activity; (2) if the toxemia is prolonged the production of adrenalin is diminished and the gastric secretory function suffers from it.

In Dr. Fontaine's review of 100 cases of achylia, we clearly notice a large number who are suffering from some form of an infection. The achylia is then a mere link in the chain of systemic disturbances. Hence, the large variety of cases belonging to the domain of the internist. The stomach tube then is a very useful instrument to detect the important link. It is very necessary to impress on clinicians generally the advisability of proving that an achylia is an achylia. I mean by this that the Ewald meal given once as a one-hour test should not be the deciding factor that the case under consideration is achylia. A fractional gastric analysis should be resorted to, and sometimes we should make use of more stimulating food as a test meal to determine the secretory power of the stomach. As a rule in younger individuals, we often see a return of the hydrochloric acid. The puzzling phase of achylia, that is, the two distinct groups of patients we see, those who suffer from it and those who do not suffer, is explained by Frank Smithies as a classification of a primary achylia with a destruction of the secretive mechanism of the glands with classic symptoms of absence of hydrochloric acid, and a secondary type of achylia concomitant with systemic disease generally who do not present classic symptoms of suffering.

It is remarkable to observe the large number of cases of biliary tract affections with permanent achylia gastrica. Another point of interest which I wish to mention is that an individual with achylia gastrica can have a gastric ulcer, but not a duodenal ulcer. This point was strongly stressed by Prof. Finsterer, of Vienna, in a conversation with me. It is difficult to explain the large number of cases without any bowel disturbances in spite of a total absence of hydrochloric acid, and again, now and then, we come across cases of diarrhea with achylia. We also observe flagellate organisms in the stools of achylic patients.

These and other phases of this most important subject in gastro-enterology require further investigation and study.

I fully agree with Dr. Fontaine that the stomach tube should be as frequently used as the blood pipette, urinometer and other laboratory instruments.

Dr. S. K. Simon, New Orleans, La.—I do not know of any condition that brings a greater surprise in my clinical work than the discovery of achylia gastrica. I do not think that there is any group of symptoms that really point directly to the presence of achylia gastrica and the only way that one can determine its presence is by gastric analysis. Even the x-ray, with all the great help it affords us in the diagnosis of gastric diseases, gives practically no information as to the presence of that condition. The discovery of achylia gastrica is always of importance in the contemplation of a case. My conception of the true achylia is that it is a part of the picture of a general infection emanating from some focus. The gastric mucosa, I think, is very frequently the site of attenuated infection from the swallowing of pus organisms in the tonsils, gums and mouth generally.

Achylia develops very insidiously, often without any digestive symptom of any kind. All the while, however, the infection of the gastric mucosa goes on, becoming more outspoken, until

finally the gastric secretion is entirely annihilated.

I am also of the belief that the frequent association of achylia with gall bladder disease is part of the picture of a general focal infection in the body. My idea has been that the infection in tonsils or gums or apical abscesses first affects the gastric mucosa and subsequently the gall bladder, that the gall tract becomes infected secondary to the gastric mucosa, but that they are both a part of the same general picture.

Dr. Fontaine (*closing*).—The object of this paper was to enter a plea for the routine use of the stomach tube. This has been prompted by the work of some of my friends, who routinely make radiographic studies of patients always where there are gastric symptoms, but nearly always overlook the use of the tube. We all know that these cases show hypermotility of the stomach, the stomach often emptying in from two to three hours. But that is not a symptom of achylia gastrica; it can be caused by other conditions.

As to the occurrence of achylia gastrica in pernicious anemia, personally I do not believe that pernicious anemia can exist without achylia gastrica. I believe it is an absolutely necessary symptom.

SPIROCHETOSIS BRONCHIALIS (CASTELLANI): CASE REPORT*

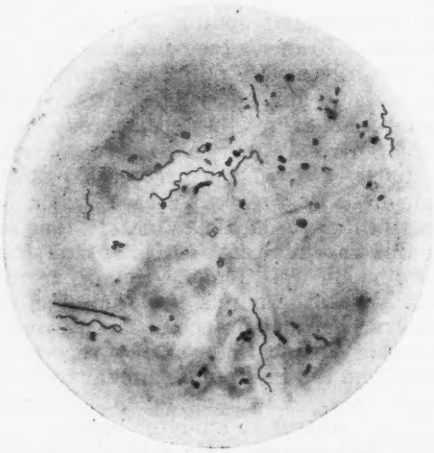
By ALVIS E. GREER, M.D., F.A.C.P.,
Houston, Tex.

The occurrence of cases of spirochetosis bronchialis (Castellani) in the United States has previously been reported. It is the object of this report to further stress the prevalence of this disease in the Southern states.

Castellani, in 1906, reported two cases of a peculiar hemorrhagic bronchitis which he had observed in Ceylon. The symptoms were briefly: a chronic cough generally more severe in the morning with fairly abundant expectoration, mucopurulent in character, occasionally blood streaked. The general condition of the patient was good. Huge numbers of spirochetes were found in the sputum and in the scrapings from the gums. Vincent's fusiform bacilli were not observed. Afterward Branch reported a case showing acute symptoms, high temperature and hemorrhagic sputum containing spirochetes. Branch's case died and the post mortem revealed a pulmonary tuberculosis without any spirochetes in the lung tissue. Following these, numerous cases were reported. In this country Johnson, in 1909, reported the first case. Rothwell, in 1910, reported a case which he classified as bronchial Vincent's angina. In this case Vincent's spirillae and fusiform bacilli were found. He was certain that Vincent's angina sometimes affects the tracheal and bronchial mucous membranes. Chamberlain (1911) reported a case from the Philippines similar to Rothwell's case. Fantham, in 1915, contributed an exhaustive study of human bronchial spirochetosis. He believed that spirochetosis bronchialis (Castellani) is caused by spirochetes different from the spirochetes of Vincent's angina.

The human mouth contains normally a number of species of spirochetes. These are Spirocheta buccalis and Spirocheta dentium. Spirocheta dentium is smaller, four microns to ten microns in length, and more flexible. Spirocheta dentium has tapering ends and is so small that few details of its structure can be determined. Spirocheta buccalis has somewhat rounded or bluntly acuminate ends and is from nine microns to twenty-two microns long. Also, intermediate types between Spirocheta dentium and Spirocheta buccalis are found. Noguchi, in 1912, succeeded in cultivating a number of species of spirochetes from the mouth, namely: Treponema macrodentium, Treponema microdentium, and Treponema mucosum. These all differ from Spirocheta buccalis. In 1906, Blanchard described an elongated spirochete with a flexible, irregularly coiled body, tapering at both ends, and often associated with fusiform bacilli, which are called Vincent's spirochetes. These spirochetes are twelve to twenty-five microns long, and Lantham states that this species may have to be merged with Spirocheta bronchialis when it has been more fully studied. As was suggested above, there are general morphological differences between the mouth spirochetes, Vincent's

*Read in Section on Medicine, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.



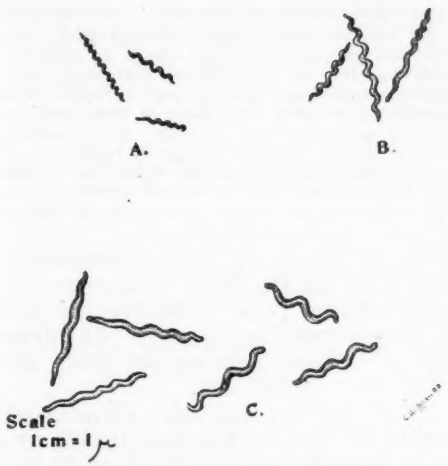
Drawing from a typical microscopical field.

spirochete and Spirocheta bronchialis, but these differences cannot be asserted too dogmatically. Beside the morphological differences so briefly stressed in this paper, there are other characteristics of note. Bronchial spirochetes are more active and die more rapidly outside of the bronchial tract. Coccoid bodies are frequently produced by Spirocheta bronchialis. Intracellular stages are occasionally seen in Spirocheta bronchialis. Tangles are not usually formed by Spirocheta bronchialis as is so common in the oral spirochetes. Spirocheta bronchialis stain with some difficulty. We have found Giemsa's, Victoria blue and the India ink stain useful. In stained films considerable morphological variation due to growth and division is noted. There are long forms, short forms, thick ones, thin ones and those of intermediate length and breadth. The cytoplasm is clear and homogeneous and often chromatin bars can be seen at intervals, giving rise to a chambered appearance. The ends are tapering, but at times appear rounded or pointed. Or one end may be more tapering than the other. The length of Spirocheta bronchialis is often due to its age, young forms being shorter. Small forms may come from transverse division of older, longer forms. The ends show difference due to the motion of the parent organism during division. The breadth seems to be dependent upon the viscosity of the medium in which the spirochete is found. Thick viscid mucus produces thick forms, and thin expectoration thin forms. There is also a slight membrane or crista often found in Spirocheta bronchialis.

Infection is effected by means of spirochetes, and especially the coccoid bodies, that leave the mouth in the spray with the expired air and by way of the nasal secretions.

There are three forms of the disease to be distinguished: (1) the acute form, (2) the subacute, and (3) the chronic form. The acute form is of short duration, the symptoms (cough, expectoration of mucopus, fever, slight chest symptoms and signs) disappearing in a period of time varying from six to seven days to two or three weeks unless the patient passes to the subacute or chronic stage. The chronic form may develop after one or more acute attacks or it may begin very slowly with a little coughing and no other symptoms. Gradually the cough becomes more frequent, the expectoration mucopurulent and bloody. The chronic form may last for years without great impairment of the general health of the patient. Between the acute and the chronic forms there are quite a series of

Vincent's Angina.



Common Spirochaetes of Mouth.

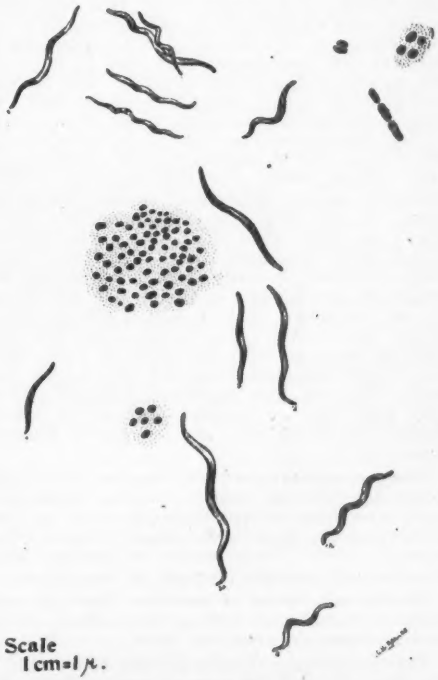
A. Spirochaetae microdentium.
B. Spirochaetae macrodentium.
C. Spirochaetae buccalis.

intermediate types, that is, the subacute types.

The disease may be complicated by pneumonia or tuberculosis. The diagnosis is based on a microscopical examination of the sputum, which is ordinarily bloody and fetid. The acute type is generally mistaken for influenza or malaria. The chronic type, presenting bloody sputum, must be differentiated from tuberculosis, endemic hemoptysis and bronchomycosis. The finding of Spirocheta bronchialis and the absence of tubercle bacilli in the first will suffice and the absence of the ova of Paragonimus westermanii and of fungi will exclude endemic hemoptysis and bronchomycosis, respectively.

The case report is as follows:

R. S. D., male, age 25, engineer, married, U. S. A., with a negative family history, entered the Baptist Hospital July 24, 1921, complaining of a cough with the expectoration of a considerable amount of easily raised, foul, thin, copper-colored sputum, occasionally blood streaked. Coughing was worse in the morning. He became hoarse very easily and talking caused rawness and soreness in the throat. Slight exertion produced shortness of breath and greater exertion often caused a slight hemoptysis. He had lost about thirty pounds in four years; fifteen pounds in the preceding year. He had a slight afternoon temperature of one hundred degrees Fahrenheit and felt somewhat weak. Occasionally he had a dull, aching pain over the upper end of the sternum. He had some difficulty in walking a straight line, especially at night; numbness and a lessened sensation to pain in his legs; lessened sexual power; slight urinary incontinence; and his bowels were obstinately constipated. This trouble began in the winter of 1919 with the gradual development of an occasional blood-streaked foul expectoration. He said spirochetes were found in the sputum at that time and an x-ray examination showed pathology in his right lung. Three months later he developed ulcers in his mouth. Vincent's angina was diagnosed. Under arsphenamin treatment he improved for six months. But then relapsed and began to notice difficulty in walking. A blood Wassermann was found positive. He had been under the care of Dr. B. Weems Turner, Houston, Tex., who treated him for syphilis from the time of his primary lesion in August, 1920, until he was referred to me in 1921, and since that time he had been under Dr. Turner's observation from time to time. With treatment by neoarsphenamin and sodium cacodylate for three months, his cough practically ceased and he was fairly well for six months. At that time he was seen again for a few weeks and then passed out of our observation. This past September he again consulted us and we found his condition practically the same as in 1921. In the interim his expectoration had been the same. In 1922 he had a rather copious



Spirochaetae Bronchialis.

hemoptysis. He had lost about ten pounds in weight and was having slight afternoon temperature. He said that if he was failing physically it was very gradually. For the past two months he had had several ulcers in his mouth. Examination on October 1, 1923, showed a fairly vigorous young man 27 years old, five feet seven inches tall, weighing 133 pounds, temperature 98.6, pulse 80, respiration 22, blood pressure 125/76. The physical examination was negative except as follows: On the left buccal membrane an ulcerated area one-eighth of an inch in diamter, with indurated borders and a crater at least one-eighth of an inch deep and without any membrane was found. A similar area was on the right buccal membrane opposite the right, lower, second molar tooth. The throat generally was red. The lung examination revealed a fairly well developed chest, less expansion on the right side, normal tactile fremitus, very moderate dullness over the right upper lobe both anteriorly and posteriorly, decreased breath sounds over the right upper lobe with no definite rales, but granular breathing was distinctly noted. There was no whispering pectoriloquy. The breath sounds at the bases were somewhat harsh. Basal excursion was good. There was some decrease in the epicritic and pain sense in his lower legs. A small scar was noticed on the glans penis. Smears made from the mouth lesions revealed spirochetes without fusiform bacilli. Sputum collected carefully revealed spirochetes in great numbers. No fusiform bacilli were found. Our records show that the chest examination made in 1921 was almost identical with the one in October, 1923. Spirochetes identical with the present ones were found then. His weight at that time was 143. His laboratory findings in July, 1921, were as follows: (1) sputum was thin, abundant, fetid, bloody, containing many spirochetes and no tubercle bacilli. (2) Blood: the Wassermann was 4 plus positive. There were 4,100,000 red cells, 8500 whites, a normal differential count, and hemoglobin 80 per cent. (3) The urine was negative. (4) The spinal fluid was negative. (5) Guinea pig inoculation failed to reveal spirochetes or tubercle bacilli. An intratracheal injection of sputum into a rabbit was unsuccessful, as the rabbit died of sepsis and no spirochetes were found. In October, 1923, his sputum was identical with the report of July, 1921. The blood examination showed nothing of moment. The red cells numbered 3,800,000, white cells 7600, with a normal differential count, hemoglobin 75 per cent, and a negative Wassermann.

X-ray examination of his lungs in July, 1921, revealed a grayish opacity ranging from the right hilus area toward the right apex, but not infiltrating the apex itself. There were no other changes noted. Plates made in October, 1923, revealed only a slight increase in this opacity.

During this period of over two years his condition has remained, with a few periods of improvement and relapse, the same.

The outstanding feature of this man's case is its chronicity and the slow evolution of the disease. Although lues is also present, he has resisted the spirochetosis bronchialis infection well.

His sputum was always blood-stained, very foul, thin and raised without effort. It contained great numbers of spirochetes, and never were fusiform bacilli or tubercle bacilli found. The spirochetes in fresh films were at first very motile, but soon lost their motility. They assumed various forms which changed rapidly. On stained films they stained with difficulty. In size they varied from eight to twenty microns. Time will not permit a detailed description of the organism.

The accompanying camera lucida drawings, made by Dr. Gibbs Milliken, of the University of Texas, illustrate the various forms found in this case. The drawings of typical microscopic fields also show their variations.

It is our opinion that spirochetosis bronchialis is more prevalent than is commonly thought, and, further, that its likelihood in any pulmonary disorder should be considered.

BIBLIOGRAPHY

Castellani, A.: Note on a peculiar form of haemoptysis with presence of numerous spirochaetae in the expectoration. Lancet 1:1384, 1906.

Branch, C. W.: A case of haemoptysis with numerous spirochaetes in the sputum. Brit. M. J., Lond., 2:1537, 1906.

Castellani, A.: Bronchial Spirochaetosis. Brit. M. J., 2: 782, 1909.

Johnson, W. B.: A case of Spirillosis of the lungs. Memphis M. Monthly, 29:183, 1909.

Rothwell, J. H.: Bronchial Vincent's Angina. J. A. M. A., 54:1867, 1910.

Chamberlain, W. P.: The occurrence in the Philippines of associated spirochaetae and fusiform bacilli in ulcers of the throat (Vincent's angina) of the mouth, and of the skin and in the lesions of the lungs (Bronchial Spirochaetosis). Philipp. J. Sci., 6:489, 1911.

Chalmers, A. J., and O'Farrel, W. R.: Bronchial spirochaetosis. J. Trop. Med., Lond., 16:329, 1913.

Taylor, J. A.: Bronchial Spirochaetosis in Uganda, with pneumonic symptoms. Ann. Trop. Med. and Parasit., 8:13, 1914.

Fantham, H. B.: Spirochaeta bronchialis (Castellani, 1907) together with remarks on the spirochaetes of the human mouth. Ann. Trop. Med. and Parasit., 9:391, 1915.

Lurie, G. A.: Notes on "Castellani's bronchospirochaetosis" with report of a case. J. Trop. Med., Lond., 18: 269, 1915.

Castellani, A.: Note on Broncho-spirochaetosis and the mycotic bronchites: affections sometimes simulating pulmonary tuberculosis. Presse Med., Par., 25:377, 1917.

Galli-Valerio, B.: Spirochetal bronchitis (Castellani's bronchitis). Corr.-Bl. f. Schweiz. Aerzte., Basel, 47:169, 1917.

Thompson, J. A.: Pulmonary Spirochaetosis. A preliminary note on spirochaetes in the sputum of soldiers admitted to special malaria wards. Brit. M. J., 2:709, 1918.

Waters, H. G.: Haemorrhagic spirochaetal bronchitis. Brit. M. J., 2:620, 1918.

Violle, H.: Hemorrhagic bronchitis: Castellani's broncho-pulmonary spirochaetosis. Lancet, 2:755, 1918.

Farah, N.: Broncho-spirochaetosis in Egypt. Lancet, 2: 608, 1919.

Delamare, G.: The clinical characteristics of bronchial spirochetosis. Bull. et Mem. Soc. Med. D. hop. de Par., s. 3, 43:526-528, 1919.

Mendez, A. A.: Broncho-pulmonary spirochaetosis in Cuba. Rev. Med. Cubana, 30:593, 1919.

Broughton-Alcock, W.: A case of broncho-spirochaetosis (Castellani's bronchitis). J. Trop. Med., Lond., 22: 213, 1919.

Simon and Raditch: The first two cases of Castellani's broncho-spirochaetosis in the Eastern districts of France. J. Trop. Med., Lond., 22:213, 1919.
Roubier, C., and Gautier, C.: Concerning some observations of spirochetal hemorrhagic bronchitis. Comp. rend. Soc. de Biol., 82:368, 1919.
Lewis, G. W.: Bronchopulmonary spirochetosis in an American. U. S. A. Nav. M. Bull., Wash., 14:149, 1920.
Nolf, P.: Fetid spirillar bronchitis and pulmonary gangrene, Arch. Int. Med., 25:429, 1920.
Castellani and Chalmers: Bronchial spirochaetosis. Manual of Tropical Med., Wm. Wood & Co., N. Y., 1920, p. 1882.
Carini, A.: A case of spirochaetal bronchitis in Brazil. Bull. Soc. Pat. exot. Par., 13:500, 1920.
Faill, C. J. C.: Broncho-pulmonary spirochaetosis. Lond., 2:401, 1920-1921.
Levy, M. D.: Bronchopulmonary spirochetosis (Castellani). N. Y. M. J., 113:186-189, 1921.
McTie: Bronchial spirochaetosis. J. Trop. M. ets., Lond., 18:63, 1915.
Chamberlain: Spirochaetae and fusiform bacilli in various lesions in the Philippines. Am. J. Trop. Dis., 2:246, 1914.
Galli-Valerio: On bronchial spirochaetosis. Centralbl. f. Bakt., 1. Abt., Orig., 76:516, 1915.
Violle: Pulmonary spirochaetosis (hemorrhagic bronchitis). Bull. Soc. path. exot., Par., 11:39, 1918.
Nolf and Spehl: Fetid bronchitis with spirilla. Arch. Med. de Belges., Brux., 71:1, 1918.
Nolf: A case of pulmonary gangrene with spirilla. Bull. Acad. d. Med. Par., 3 s, 80:657, 1918.
Draggotti: Castellani's disease or broncho-spirochaetosis. Policlin., Roma, 25: Sez. prat. 1198, 1918.
Verbizier: Broncho-pulmonary spirochaetosis in an epidemic of grippe. Bull. Acad. Med. Par., s. 3, 80:310, 1918.
Barbary: Necessity of identifying hemorrhagic, pseudo-tuberculous, bronchopulmonary spirochaetosis. Bull. Acad. de Med., Par., 79:243, 1918.
Lee: Bronchospirochaetosis with report of a case. China M. J., Shanghai, 32:332, 1918.
Ribeyro: A new case of bronchopulmonary spirochaetosis. Cron. Med., Lima, 35:351, 1918.
Violle: Broncho-pulmonary spirochaetosis (Bronchite Sanglante). Rev. gen. de clin. et de therap., 32:145, 1918.
Parof: Pulmonary gangrene determined by the association of Vincent's fuso-spirilla. Bull. et mem. Soc. Med. de hop. d. Par., s. 3, 42:1111, 1918.
Loygne, Bonnet et Peyre: Bacteriological notes on grippe. Spirochetosis in the course of pulmonary complications. Bull. et mem. Soc. Med. des Hop. de Par., s. 3, 42:1099, 1918.
Violle: Hemorrhagic bronchitis (Castellani broncho-pulmonary spirochaetosis). Arch. de Med. et pharm. nav., Par., 106:81, 1918 (30 case reports).
Benech, J.: Hemorrhagic bronchitis (Castellani). Rev. med. de l' est, Nancy, 1919, 47:377-382.
Govaerts, P.: A case of pseudo "bronchospirochaetosis." Ann. et bull. Soc. roy. d. sc. med. et nat. de Brux, 88: 95, 1920.
Farah, Najib: Bronchial spirochaetosis (Castellani). Clinical study of ten cases; therapeudic success with intramuscular injections of iodine. Presse Med. Par., 27:774-776, 1919.
Carini, A.: A case of Castellani's bronchitis due to spirochaeta bronchialis. Brazil Med., Rio de Jan., 1919, 33:269.
Dolimier, R.: Concerning Castellani's broncho-spirochetosis. Presse Med., Par., 27:124, 1919.
Pringault and Mercier: Castellani's broncho-spirochaetosis at Marseille. Marseille Med., 61:508, 1919.
Derrien: On Castellani's hemorrhagic broncho-alveolar spirochetosis. Paris Med., 29:80, 1918.
Dragotti, G.: Castellani's disease or bronchospirochaetosis. Roma, 25: sez. prat., 1198, 1918.
Violle, H.: Hemorrhagic bronchitis (Castellani's broncho-pulmonary spirochaetosis). Arch. de Med. et pharm. Nav., Par., 105:81-118, 1918.
Beau, Dide, Ribereau: Note on an epidemic affection with hemorrhagic tendency and the transient presence of a spirilla in the sputum. Bull. et mem. d. Soc. Med. des hop. de Par., s. 3, 42:582, 1919.
Delamare: On some cases of bronchopulmonary spirochaetosis. Compt. rend. Soc. de biol., Par., 1919, 82: 450.
Dargallo: Castellani's bronchopulmonary spirochaetosis. Rev. Espan. de Med. y cirug., Barcelona, 2:323, 1919.
Farah: Bronchial spirochaetosis (Castellani) Presse Med., Par., 27:744, 1919.
Horst: Hemorrhagic bronchitis. Nederl. Tijdschr. v. Geneesk., Amst., 2:1405, 1919.
Horta: Hemorrhagic bronchitis. Brazil Med., Rio de Jan., 33:158, 1919.
Saloman, M.: Broncho-pulmonary spirochetosis. Ann. de med., Par., 7:53-81, 1920.
Torres, Suels R., and Cuenca, H.: Second case of Castellani's bronchopulmonary spirochetosis described in Venezuela. Gac. Med. de Caracas, 28:172, 1920.
Mason, V. R.: Pleural spirochaetosis. Bull. Johns Hopkins Hosp., Balt., 31:435-438, 1920.
Trocello, E.: A case of Castellani's chronic broncho-spirochaetosis. Ann. di Med. Nav., Roma, 1920, 2:638-685.
Mendelson, R. W.: Bronchial spirochaetosis (Castellani's bronchitis). J. Trop. M. (Ets.) Lond., 24:59, 1921.
Sinclair: Vincent's Spirochaete and hemorrhage in pulmonary tuberculosis. Am. Rev. Tuberc., 4:201, 1920.
Mairesse, Jacques: Clinical and pathogenical contribution to the study of broncho-spirochaetosis. Paris, 62, p. 80, 1920.
Bloedorn, W. A., and Houghton, J. E.: Bronchial spirochetosis. J. A. M. M., Chicago, 76:1559-1563, 1921.
Rho, F.: Castellani's Bronchospirochaetosis (Hemorrhagic bronchopulmonary spirochaetosis). Med. ital., Milano, 2:134-136, 1921.

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DISCUSSION

Dr. Louis Hamman, Baltimore, Md.—The recognition of spirochetal infection of the bronchi and lungs is an important advance in the study of respiratory diseases. Dr. Greer has clearly outlined the clinical manifestations of the infection. In these infections it is altogether likely that the spirochete enters as a secondary invader. What we know of its activities in more accessible parts of the body leads us to believe that it cannot attack healthy tissue, but gets a foothold only when tissue has been destroyed by trauma or disease. When once it gets a foothold it enters as an important factor in modifying the course of events. The longest known and best understood spirochetal infection is Vincent's angina. In these throat and mouth infections there is an almost constant association with a fusiform bacillus. This symbiosis has been noted in ulcerative and gangrenous lesions elsewhere; for instance, in balanitis, vulvitis, otitis, ulcerative lesions about the nails, etc. The combination of spirilla and fusiform bacilli has also been noted in bronchial and pulmonary infections. Kline reports the association in three cases of pulmonary gangrene; an instance of pyopneumothorax reported from Vienna exhibited the symbiosis. In the case from the Johns Hopkins Hospital reported by Mason, the pleural fluid contained numerous spirilla and many bacilli and cocci, but no fusiform bacilli. Are the spirochetes that are found in bronchial and pulmonary lesions the same as those found in Vincent's angina? The question cannot yet be answered, but there is growing evidence that they are, an important bit of evidence being the frequently found symbiosis with fusiform bacilli. If the identity of the two be established then bronchial and pulmonary spirochetosis will be the bronchial or pulmonary localization of Vincent's disease.

The subject is of the greatest interest to practicing physicians because evidence is accumulating to show that the infection is by no means rare and recognition of the condition is rewarded by the satisfactory results of treatment.

Dr. C. C. Bass, New Orleans, La.—It has been a matter of great interest that the spirochetes

as originally found by Castellani in bronchial spirochetosis have not been, up to now, differentiated from the spirochetes of Vincent's angina. The fact that they resemble very much those of Vincent's angina and cannot be differentiated from them, and the fact that they are to be found in apparently healthy individuals, still further suggests the possibility that we are dealing with a secondary infection.

A number of cases of gangrene of the lung in which spirochetes of this type have been demonstrated and appear to have been the only organisms present, suggest that possibly they are capable of attacking tissue. On the other hand, it must be remembered that the most favorable culture media for spirochetes is dead tissue, tissue that has not been merely altered, but devitalized or killed. It does not take a very wide stretch of the imagination to believe that individuals who are carrying these spirochetes, perhaps just as other individuals carry other infections, might have received damage to lung and bronchial tissue and then naturally the organisms would rapidly multiply. It is not quite so easy to understand, however, their attacking the bronchi.

The cases suggest the importance of examining the sputum in patients with bronchitis in which there is blood or blood-stained sputum. In the event that the examination is indefinite or the source of spirochetes found is in doubt, a very simple procedure is, as already suggested, to wash the particles of sputum which are spread on a slide for examination.

Dr. Greer (closing).—Dr. Hamman brought out the question of the possibility of the spirochetosis infection's being identical with that of Vincent's angina, with an organism that has been probably changed somewhat by location. Personally that has been my impression from perusing the literature on the subject, although these organisms are undoubtedly different and act very differently in fresh films. I think eventually it will be proven that spirochetosis bronchialis is associated in some way with Vincent's angina.

TUBERCULOSIS IN INFANTS*

By OSCAR M. SCHLOSS, M.D.,
New York, N. Y.

It is not my purpose to discuss the entire subject of tuberculosis in infants, but simply to take up that part which has a bearing on the diagnosis and treatment. In infancy and early childhood the curable stage of the disease is exceedingly difficult to recognize. The manifest form of the disease is usually general miliary tuberculosis which is fatal inevitably.

Tuberculosis in infants can be divided into primary, secondary and tertiary stages. Of the primary stage we know very little except that it is assumed that at the time the micro-organisms enter the body there is an initial lesion of some kind. The secondary stage in infants is an important one. From the primary lesion the lymphatic glands become involved and it is here that the fate of the individual is decided. When the disease involves the lymph nodes it may become latent, it may heal, or it may spread rapidly. In very young infants rapid healing very rarely occurs. From this secondary focus originate the so-called tertiary lesions which form the clinically recognized forms of tuberculosis with which we are so very familiar. Unfortunately in young infants this stage of tuberculosis is practically always a general miliary tuberculosis. Very rarely there are isolated lesions in bones and joints, in the viscera or serous membranes. The older the infant or child the more likely is the tertiary lesion to be localized instead of general, leading to involvement which is more easily recognized and of more favorable prognosis.

For practical consideration the portals of entry in infantile tuberculosis are ordinarily two, either pulmonary or enteric. The rarer modes of entry, such as through the tonsils or skin, are usually readily recognized and consideration of these is beyond the scope of this paper. In the pulmonary form of the disease it would seem at the present time that the conception of Ghon is the most acceptable and best in accord with the available evidence. On entry, the tubercle bacilli cause a small local pulmonary lesion which heals very rapidly and causes no symptoms whatever. From this primary lesion, however, arises an infection of the mediastinal lymph nodes and it is here that the fate of the organism is decided. The disease may heal in rare instances. It may lie latent for a long period of time. It may spread very rapidly and give rise to general tuberculosis or to a localized lesion. In the enteric form of infection which is due probably in most instances to the bovine bacillus, we do not know at the

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present time the nature of the primary lesion, or whether a definite one comparable to the pulmonary lesion of Ghon occurs at all. We do not know whether there occurs in the mucous membrane of the intestine a local lesion or whether the tubercle bacilli may pass through the intestinal wall without producing a local lesion. There have been a considerable number of observations on this subject, but it is at present quite undecided. It is sufficient for our information to know that there occurs a secondary lesion in the mesenteric lymph nodes and here the focal disease follows the same course as it may pursue in the mediastinal glands.

No consideration of tuberculosis can evade the important question of prevention and before discussing diagnosis I shall have a few words to say on this subject. Preventive measures which are widespread and due to the activity of many agencies have done much to limit the infection of young individuals. The ideal, of course, would be absolute prevention, but until we are able to recognize tuberculosis in the adult earlier this result will probably not be obtained. It is therefore probable that for many years to come we shall be confronted with tuberculosis in young infants.

About the enteric form of infection I think there is a little to be said. In most instances it is due to the bovine bacillus and is usually a milk-born infection. In the greater number of larger cities today all the milk for general consumption must be either pasteurized or certified. Milk properly pasteurized is, of course, free from living tubercle bacilli. I question whether the same can be said of certified milk at the present time. I think most of us are in the habit of boiling all milk for infant feeding. This is done partly for reasons other than the prevention of tuberculosis. The lack of protection from certified milk may arise from two sources. An animal very recently infected with tuberculosis may be admitted into a herd at which time the test is negative. In such instances it is possible for the disease to involve the udder and to be transmitted to other animals before the next tuberculin test reveals the infection. A second cause of danger is the fact that the reactivity to tuberculin of an infected animal can be suppressed by giving a large dose of tuberculin. This renders it possible for dishonest dealers successfully to dispose of infected cows as tuberculosis-free. How great is the danger from certified milk cannot be stated. Certainly it is small, but it is equally certain that to some degree the danger is real as is attested by actual experience. It therefore seems to me that the whole problem must resolve itself into the answer of the comparatively simple question whether the good that can arise from the feeding of raw certified milk is greater than the danger of the transmission of infection with the bovine tubercle bacillus in this way. Bovine tuberculosis is certainly a factor to be reckoned with, as it probably comprises, at least in a number of cities in this country, from 12 to 25 per cent of the tuberculous infections in early life.

In regard to symptomatology it is perfectly obvious that if we are to do anything in controlling the large mortality of tuberculosis in infants the disease must be recognized in its secondary or glandular stage. It is rather interesting that the diagnosis of tuberculosis in infancy is made more often in hospital patients than in private patients and the reason is obviously that all patients entering the hospital are subjected to a very careful study, including a routine tuberculin test. I have been interested in going over the histories of infants with tuberculosis in which the families were sufficiently intelligent to give very careful and reliable histories and in practically all of these cases there was a period in the infant's life during which there were present definite symptoms almost unquestionably due to the secondary or glandular stage of tuberculosis. These symptoms were often very mild. They were not definite and could have been due to other causes, but they were present in nearly all cases. The most prominent was the history of a period during which the infant who had previously thrived did not do so well. There was failure to gain and there was definite pallor. In practically all in which the temperature was taken there was a history of a low grade of fever and oftentimes a rise to 101 degrees or more. In cases of the pulmonary form there was in most cases a history of cough. The cough,

as a rule, was infrequent and mild, but it was persistent. In a few cases of enteric infections there were similar symptoms. The general symptoms were practically identical with those present in the pulmonary form with the exception of cough. In both groups of cases there was at times a tendency to vomiting and diarrhea. Such symptoms may last only a short period of time, a few weeks, a month or two, and may then disappear. The symptoms due to the infection may continue and gradually merge into symptoms of tuberculous meningitis or acute general miliary tuberculosis. As all of you know, there is rarely the development of an extreme degree of emaciation such as is commonly supposed to accompany tuberculosis in infancy. I am sure we have all been struck at numerous times by the fact and have remarked upon it that an infant may come into the hospital with tuberculous meningitis or general miliary tuberculosis with slight if any impairment of its nutrition. In other words, we have to deal in infants with a secondary or glandular state of tuberculosis which causes very few symptoms, which does not make the infant particularly ill, from which very rapidly general tuberculosis develops. In the recognition of the secondary stage the physical signs are unfortunately of little use. It is only in cases where there is a tremendous enlargement of the mediastinal or mesenteric lymph nodes that we get definite physical signs. I will not enter upon a discussion of the usefulness of D'Espine's sign because in small infants it is very difficult to elicit and in my experience is of little value unless the granular enlargement is of great degree. Greatly enlarged mesenteric lymph nodes may be palpated in some cases, leading to a presumptive diagnosis which may be confirmed by a tuberculin test. There are only two objective means at our disposal which should enable us to make a definite diagnosis in the pulmonary form. One is the use of the tuberculin test and the other is the information given by the x-ray. In regard to the tuberculin test I think we have all come to appreciate the fact that the cutaneous dose alone is not sufficient and that in suspicious cases one should resort to the intracutaneous test, using at least 0.2 milligrams of tuberculin before one can consider the test negative. By these two means most of the cases can be recognized, for in the young individual a positive tuberculin test is always of significance.

Up to the last few years in young infants a positive tuberculin test alone was considered of practically fatal prognostic import. It was generally felt that the resistance of young infants to tuberculous infections was low and that once infected a catastrophe would almost invariably occur. That this is true in many instances there can be no question. For some years I was connected with an institution which dealt with a great number of supposedly well infants. These infants on admission to the institution and before being sent to foster homes were all tested with tuberculin. A large number of those with positive cutaneous tests succumbed to tuberculous meningitis or general miliary tuberculosis within a year or so. The results, however, among the better classes where appropriate treatment can be given are very different. I have been in contact with, or have knowledge of a number of cases in private practice where the disease was recognized early and the parents were in position to give the infants appropriate treatment. In these cases there were only two fatalities, which is in marked contrast to the usual experience, and I think furnishes sufficient evidence that tuberculosis in infancy recognized at the proper time is far from being an entirely hopeless condition. Indeed, it is my belief that if recognized early in the secondary stage when the infant is in a fair condition of nutrition, the prognosis is not extremely grave provided proper care and treatment are available.

In regard to the treatment there is very little to say. It is essentially the same as for other forms of tuberculosis. The infant is kept out of doors constantly. The food is carefully regulated, giving proper amounts, avoiding overfeeding and particularly overfeeding with fat, and making every effort to avoid digestive symptoms. The use of heliotherapy is of the greatest value. In addition to direct sunlight the ultraviolet light is of use in supplementing treatment with the sun's rays. It is used on the days when the sun does

not shine. The object should be in the use of both to produce a very marked tanning of the skin. Of the greatest importance is the prevention of infections, especially measles, whooping cough and common colds. To insure this protection the infant should be carefully isolated from all sources of infection, either actual or potential.

In conclusion, I wish to summarize very briefly the important feature of tuberculosis in young infants. Most if not all infants succumbing to generalized tuberculosis have passed through a stage during which the disease was localized and latent and if the disease had been recognized at that time the chances for effective treatment would have been good.

TETANY IN A BREAST-FED BABY WITH A DECIDED INCREASE IN CONVULSIONS AFTER RECEIVING SALINE HYPODERMOCLYSIS*

By CHARLES E. CONRAD, M.D.,
Harrisonburg, Va.

This case was a breast-fed baby which had severe convulsive seizures after having received a saline hypodermoclysis.

B. McD. was 14 months old. She had been normally delivered and her birth weight was 8 pounds.

Her father, mother and two other children were living and well. There had been no miscarriages, no history of convulsions with either of the other children and none previous to this with the patient.

The baby had not had any previous acute illness. She was breast fed. Her nursing hours were irregular, and for the preceding two months she had been given 4 ounces of cow's milk a day in addition to the breast.

She had been fretful for several weeks, and the day before the present illness the mother had given her a small amount of huckleberry juice. I question whether this was limited to the juice.

April 23, 1922, she vomited twice.

April 24 she had two convulsions.

April 25 she had several severe convulsions.

April 26 she had several convulsions during the day, which became worse about midnight, and from then until 8 a. m. April 27 she had a convulsion every ten to twenty minutes. She had been given castor oil every day since the beginning of the illness, with two stools a day as a result. She had been given sodium bromid for the convulsions, 100 grains in the preceding 10 hours.

I saw her in consultation first at 9:30 a. m. on April 27. At that time, examination showed a well developed baby, dull and stupid from bromids, but if disturbed quite restless with carpopedal spasm; skin, dry; fontenelle, open (1 in. x 1 in.) and depressed; sutures, closed; no craniotabes; eyes showed slight nystagmus but no strabismus; pupils equal and reacted to light; ears, normal to inspection; tongue, coated; five teeth; tonsils, small and apparently normal; lymph nodes, normal; thorax, well formed; no beading; heart and lungs normal to percussion and auscultation; abdomen, soft and no distension; no abnormal masses felt; liver, one-half inch below the costal margin; spleen not palpable; patella reflex, very active; no ankle clonus; and no epiphyseal enlargement.

Chvostek and Trousseau signs were both positive. On pressing down the tongue to examine the throat she showed laryngospasm with an inspiratory crow. Her rectal temperature was 99 degrees Fahrenheit, pulse 80, good volume, and respiration 30. The highest temperature previous to my seeing her was 100 degrees, this being taken by axilla.

I made a diagnosis of tetany and prescribed calcium lactate, grains 10 every three hours, also a mixtura Rhei et Sodii, dram one t. i. d. The baby showed improvement as to tetany, not having any convulsions after April 30 until given the saline hypodermoclysis May 4, which I shall take up later.

I did not see her again until May 4, when she was brought into the hospital in a very critical condition, showing severe dehydration, with fontenelle sunken and pulse rapid and weak. On account of the dehydration, I ordered a normal saline hypodermoclysis of 120 mils to be given at 10 p. m. and repeated at 7 a. m. The nurse reported to me the following morning that one hour after giving the first hypodermoclysis, or about 11 p. m., the baby began to have convulsions, the first she had had since April 30. These continued through the night at intervals of one hour. After the second hypodermoclysis, which was given at 7 a. m., she developed at about 8 a. m. a state of practically continuous convulsions, in which state I saw her at 8:30 a. m. Had I known of the convulsions during the night I would not have had the second hypodermoclysis given. I gave her calcium bromid by rectum and into the stomach by means of a tube. I saw her next at 1 p. m., and as she had not relaxed, I gave her a hypodermic of 1/30 grain of morphia sulphate. This quieted her and she relaxed. After this she had no more convulsions, but would show carpopedal spasm when disturbed for the next two days. Six hours after giving her the morphia I put her on calcium bromid, grains 5, and calcium chlorid, grains 10, every four hours. The bromid was omitted after

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five days. Not being able to obtain any mother's milk, I put her on cereals, orange juice and a weak dilution of Klim. This was gradually increased in strength. She continued to improve and was discharged from the hospital 12 days after admission. At the time of her discharge she had gained one pound in weight and was having two normal stools a day. The only nervous symptom was a mild Chvostek. When sent home she was placed on cod liver oil, 10 drops three times a day, and calcium chlorid, grains 10, three times a day.

After being home for two weeks, the family physician had her put back on the breast. The mother stated that the milk returned, but after being on the breast for one week the baby began to show mild convulsions again. From her description I do not think they were generalized convulsions, but simply carpopedal spasms. The family physician discontinued the calcium chlorid, which I had instructed to be given for some weeks, and was giving sodium bromid. I was called to see her in consultation again and put her back on calcium chlorid and Klim. I did not see the baby again until July 2, at which time she was doing splendidly. The father stated that the baby had had no further trouble since the last time I saw her.

I heard from the baby in August this year, which is a little over a year since her trouble, and she has had no more convulsions.

SUMMARY

The convulsions which the baby had in the hospital were unquestionably due to the saline solution I gave her and I feel the mother's milk was at fault, as she began to show signs of returning active tetany when placed back on it. It was discontinued entirely, and the baby has shown no returning signs of tetany for over a year.

DISCUSSION

Dr. Arthur A. Shawkey, Charleston, W. Va.—No doubt an explanation of the very interesting phenomena of this case can be found in the field of biochemistry. I want to call attention to one feature of the case which if it is not the real cause of the trouble is at least back of the real cause, as is true in a very large percentage of cases of all sick children, namely, a very bad feeding history.

Here is a child fourteen months old, nursed very often, no record of how often, and no mention of any food other than the mother's milk. No vegetables have been given.

I would like to place a little emphasis upon what Dr. McCormack said this morning about ignorance in the feeding of children. Those of us who have a few "silver threads among the gold" can very well remember that in our primary medical courses we were taught nothing about the feeding of infants and children.

MULTIPLE MYELOMA WITH REPORT OF TWO CASES*†

By JOHN W. SCOTT, M.D.,
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It is the purpose of this paper to report two cases of multiple myeloma which have been under observation in the past year and to note some unusual features which they present. These features seem to justify this report, although neither case came to necropsy, one being still alive and necropsy having been refused in the other.

Multiple myeloma is a neoplastic disease of the bone marrow characterized

"by foci of growth arising in different parts of the marrow system at approximately the same time, the individual tumors springing from certain primitive cells of the blood-forming series" (Symmers).[1]

Whether these cells are always myeloblasts (Symmers)[1] or whether they may also arise from a sort of bone plasma cell (MacCallum)[2] or from lymphocytes or even erythroblasts (Ewing)[3] is unsettled. These distinctions, however, lie in the pathology alone and are indistinguishable clinically, all proceeding to fatal termination.

The growing tumor masses encroach upon the surrounding bone and extend to the cortex. Erosion or atrophy rather than erosion by tumor apposition (Wright)[4] takes place, sometimes resulting in fracture. However, as Wells[5] points out, instead of the cortex's suffering erosion, increasing pressure in the tumor mass due to its unyielding bony encasement may result in cutting off the blood supply in the tumor itself, then necrosis, hemorrhage into the necrotic area, failure to organize the clot, due again to the bony shell, and finally, a tumor of hemorrhagic type showing none of the characteristics of the original neoplasm may occur.

The most frequent sites of these tumors are the flat bones and the bodies of the vertebrae, although they may occur in

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†Acknowledgment is made to Dr. Louis Hamman for many suggestions and for permission to report one of these cases.

any bone. They metastasize rarely, though that metastasis does occur has been shown by Pepper and Pearce[6] in an analysis of a number of reported cases in which foci were found in the liver, spleen, ovary, tonsils and lymph nodes, and in one case of their own in which cells identical with the neoplasm were found in the liver and spleen. Symmers[1] would classify none of the reported metastases except one of Christian's[7] and one of his own as true metastases by cell transplantation.

While von Rustizsky,[8] in 1873, described these bone lesions as multiple myeloma, and while Bence-Jones[8] in 1847 described the "New substance occurring in the urine of a patient with mollities ossium," the substance now known as the Bence-Jones protein, it was not until 1889 that Kahler[8] noted the relationship between this neoplastic disease of the bones and the peculiar protein first described by Bence-Jones. In 1916 Martiri[8] compiled 204 cases and added one. In 1920, Wallgren[9] was able to find only 118 cases that had come to necropsy. It is, then, of infrequent occurrence, although there is a large number of cases unrecognized on account of the obscurity of the symptoms and frequent mistaking of the Bence-Jones body for serum albumin.

The etiology is obscure, its incidence according to Ewing[3] in males and females is as 19 to 7 and, usually, in individuals over 35 years of age. (One of our cases was a woman of 32.) Trauma seems an unlikely cause, though many cases have followed injury. No relation to infections has been shown. Stokvis, according to Ewing, reports the disease in two brothers. Cantieri[10] describes a case which he attributes, inconclusively, it seems, to starvation self-inflicted to avoid military service.

The chief diagnostic factor is the Bence-Jones body. More than 80 per cent of cases of myeloma occur in association with it. This body is also found in other conditions, though most of these are not unrelated to the bone marrow, being in the main leukemias, metastases of tumors to the bones, or bone tumors of various sorts (Boggs and Guthrie[11 12]), some of the latter, presumably, myelomata which have lost their identity in the manner described by Wells. Micheli[13] reports the body in a case of lymphosarcomatous tumor of the bone marrow without macroscopically or histologically demonstrable lesion of the bone marrow of metastatic, myelomatous or leukemic type. Miller and Baetjer[14] have reported five cases "in which there was complete absence of bone marrow, bone or blood disease so far as modern methods could detect them." Two of these were definite nephritics; the other three, though showing numerous casts, had normal kidney function. These cases had not come to necropsy and the authors, quoting Taylor, Miller and Sweet, who found definite widespread myeloma at necropsy, unrevealed by the roentgen ray, agreed with the observation of Vance that in no case of Bence-Jones proteinuria have bones or bone marrow been definitely proven free of some pathologic process. (Micheli's case just referred to seems to contradict this.)

In this connection the question arises whether the excretion of the protein, with small areas of myeloma which had escaped recognition, might not have been the cause of the nephritis as suggested by Rosenbloom quoting Stokvis,[8] who caused nephritis in dogs by repeated injections of one of the proteoses. One of the cases to be reported here, excreting a large amount of the protein, with severe nephritis and very low kidney function, yet with very small areas of demonstrable disease, suggests the possibility of failure to detect areas of myeloma by roentgenography if these should be confined to such places as the dorsal spine and the sternum, which are at once frequent sites of the disease and difficult of satisfactory roentgenography.*

Granted that the Bence-Jones protein is not pathognomonic of multiple myeloma, it is of prime importance in diagnosis particularly because of the indefinite symptoms presented by most of the cases. It should be found routinely and should serve to suggest myeloma. The clinician should not be required to suggest search for the protein. On account of the relative in-

*Dr. Miller has just told me that two of these cases came to necropsy after the publication of his paper and that no lesion of bone or bone marrow was found.

frequency of its occurrence this often escapes notice even in hands ordinarily careful.

That it is a true protein is shown by its nitrogen partition and other criteria. There are many characteristic reactions, a few simple ones sufficing to identify it:

(1) Coagulation occurs between 42 and 60 degrees Centigrade, depending upon the degree of acidity and the salt content of the urine. Coagulation occurring soon after the test tube meets the flame should attract attention. As the temperature is increased to the boiling point solution occurs. This is more or less complete, depending upon the degree of acidity and salt concentration. As it is allowed to cool precipitation again occurs about 60 degrees Centigrade. Small, sticky coagula adhering to the side of the test tube are suggestive.

(2) Heavy precipitation on the addition of two volumes of saturated solution of ammonium sulphate distinguishes it from serum albumin in which precipitation occurs only on saturation of the solution with ammonium sulphate.

(3) Heavy precipitation occurs on the addition of two volumes of 95 per cent alcohol.

(4) A heavy ring appears on laying the urine over concentrated hydrochloric acid.

This body has been precipitated in crystalline form, but with great difficulty. Some observers have seen urine milky when voided and Rosenbloom[15] reports a spontaneous amorphous precipitate. A case reported by both Wilson[16] and Walters[17] was the only instance, according to Wilson, previous to one of our cases, in which spontaneous crystallization was reported as occurring within a few hours of voiding. Bramwell and Paton,[19] however, in 1892, reported the occurrence in urine sometimes on standing "a day or two" and sometimes after standing several weeks of a copious white precipitate which, when mixed with the supernatant urine, gave the luster of watered silk. On microscopic examination this was found to be composed of large elongated rhombic crystals lying either singly or in rosettes. Bramwell and Paton considered these crystals a globulin, "the first to be recovered and examined from the animal body in crystalline form." Krauss,[18] however, evidently in view of the morphology and reactions which Bramwell and Paton[19] describe, believes them to have been those of the Bence-Jones protein, the first instance in which the latter were described as occurring in crystalline form.

Interesting immunological differences in the Bence-Jones protein from different sources, and between it and blood serum, have been shown by Bayne-Jones[20] and Wilson[21] demonstrating that there are, by this criterion at least, two or three of these bodies. One of these was the spontaneously crystallized protein of the Walters case and this, being purer, gave more definite precipitin and anaphylactic reactions than did those in solution or those obtained by coagulation or precipitation.

The source of the body has been variously explained. It seems beyond doubt that it is not derived from the tumor cells, and the large amount ordinarily excreted speaks strongly against this. One of our cases whose demonstrated areas of disease are very small must have in the last two years excreted about 7 kilograms of the protein and has gained 13.5 kilograms in weight in the same period. Now on a low protein diet (about 0.87 grams per kilogram) he is apparently maintaining his nitrogen balance and excreting daily about 2000 mils of urine with usually 5 grams of the protein to the liter. This excretion, so large in relation to the apparent extent of the lesion, is in striking contrast to the low excretion in non-myeloma cases, such as leukemia, for example, and supports the theory that a toxin from the neoplasm so influences endogenous metabolism that this body escapes through the kidney before its catabolism is complete. This is the view of Hopkins and Savory[22] after studies of metabolism and the effect of diet. Walters[17] has shown, as did Hopkins and Savory[22] ten years previously, that the amount and kind of protein ingested has no influence on the amount of the Bence-Jones body excreted.

Until palpable tumors or deformities have occurred, the physical findings are apt to be quite out of proportion to the evident severity of the disease.

The severe pain of a destructive lesion of bone is usually the presenting complaint. As bone destruction goes on there may be fracture or deformity with its resulting damage to underlying organs such as the spinal cord and the lungs. Sooner or later secondary anemia occurs. In one of our cases, however, with severe anemia the color index has been always one or more than one.

Nephritis of the nitrogen retention type seems to have been present in most of the cases, though Walters[23] considers seriously impaired kidney function rare. Both of our cases had very high nitrogen retention, low 'phthalein excretion, and definite uremia with hypotension. One died in uremic coma and the other had a uremic attack. The disease terminates fatally in from three months to eight years.

Treatment is wholly palliative. Massive doses of radium have been successful in relieving pain.

Case I.—W. T. S., a merchant, aged 59, came to us in May, 1921, through the courtesy of Dr. C. L. Wheeler, complaining of weakness and loss of weight. His illness had begun 18 months before with these symptoms and, at the time he presented himself, pain in the back, weakness, a loss of 20 pounds in weight, some dyspnea on exertion, and nocturnal polyuria were his only symptoms. He was a well developed, very intelligent white man, pale and poorly nourished. The radial and temporal arteries were rather hard. There was a smooth bone-like elevation on the left parietal bone which was not tender and over which the skin was freely movable (this the patient said had been present since he could remember). There was a soft, movable, doughy tumor, apparently a lipoma, under the skin along the lower part of dorsal spine, which had been present for many years. The heart was not enlarged, and there was a blowing systolic murmur at the apex. The blood pressure was 140 systolic and 60 diastolic. The blood Wassermann was negative. The hemoglobin was 48 per cent (Dare). The red blood cells were 2,400,000, the white 8800 with polymorphonuclears 67 per cent, small lymphocytes 20 per cent, and large lymphocytes 13 per cent. There was moderate anisocytosis, but there were no nucleated red cells and no parasites and the smear was otherwise negative. The specific gravity of the urine was 1010 and there was a trace of albumin. Special examination for Bence-Jones protein was not asked for and the body was not found. There were a considerable number of hyaline casts. The 'phthalein excretion was 5 per cent in two hours. There were 53 milligrams of urea nitrogen and 4.5 milligrams of creatinin per 100 mils of blood.

The stool was negative for blood and parasites. Diagnosis of nephritis of nitrogen retention type was made on the low 'phthalein excretion and the high nitrogen retention. For a time improvement followed on a low protein, high carbohydrate diet, but he again lost weight and strength and in September, 1921, was referred to Dr. Louis Hamman. While in his care the Bence-Jones protein in large amounts was found and small areas of rarefaction were found in the cranial bones, making the diagnosis of multiple myeloma. Although the laboratory findings were much more complete than those previously done, they did not differ materially except for the finding of the Bence-Jones body. The color index was 1.04. The blood urea nitrogen was higher, 71.5 milligrams per 100 mils, and the creatinin lower, 3.8 milligrams per 100 mils. The Mosenthal concentration test showed a range of 2 at a low level of specific gravity.

He returned home in October, 1921. His course since has shown general improvement, though he had a severe uremic attack, with hiccough lasting 11 days, in December, 1922. He has gained 30 pounds in the two years. The hemoglobin is 60 per cent with red blood cells 2,800,000 and a color index of 1.07. The urine shows constantly Bence-Jones protein averaging 5 grams per liter and in September, 1923, 2 grams of serum albumin per liter without casts. The 'phthalein excretion was 3.6 per cent in two hours, blood urea nitrogen was 95.2 and creatinin 4.3 milligrams per 100 mils of blood. Roentgenography revealed some advance in the areas of rarefaction in the parietal and occipital bones, a similar area in the body of the fifth lumbar vertebra, and suspicious areas in the carpal bones. There was the dense shadow of calcification of the iliac arteries and those of the extremities. The shadow of the left kidney was much enlarged.

Case II.—Mrs. G. C. W., aged 32, married, referred by Dr. W. M. Elliott, of Lancaster, Ky., through the courtesy of Dr. C. L. Wheeler, was first seen by me on December 11, 1922. She complained of pain in the left shoulder and of progressive loss of strength. Her family and previous history presented nothing of importance. Her illness had begun eight months previously with great pain in the lower part of the right side of the chest. After two or three weeks this became less severe, but three months later severe pain appeared along the dorsal spine and in the right side of the chest. At the same time a large amount of albumin in the urine had been reported and a diagnosis of nephritis had been made. She continued to lose weight and strength and five weeks before admission to the hospital had suffered great increase of pain under the right scapula. Since that time she had been confined to bed. About December she had a frank hematuria and was seen by Dr. C. L. Wheeler, who found, on cystoscopy, slight congestion of the right ureteral orifice. The trigone was reddened, with one ecchymotic spot. Guinea pig inoculation with the urine was negative.

Dr. Wheeler referred her to us and on admission, in addition to the presenting complaint of pain in the left shoulder, and weakness, there

was severe cough with mucopurulent expectoration and nausea and occasional vomiting. Physical examination was typical in that the findings were entirely out of proportion to the evident severity of the disease. She was a young white woman about 62 inches in height and weighing about 85 pounds, pale, poorly nourished, being moved in bed with much difficulty on account of pain in the left shoulder and back. In the lungs there were a good many scattered moist rales without significant changes in note or breath sounds. Examination was otherwise negative and there were no palpable tumor masses. The blood pressure was 110 systolic and 80 diastolic. The blood Wassermann was negative; the hemoglobin 36 per cent; the red blood cells were 2,288,000; the white blood cells 10,400; polymorphonuclears 60 per cent; mononuclears 40 per cent. The blood urea nitrogen was 32 milligrams, uric acid 7 milligrams, creatinin 5 milligrams, and sugar 140 milligrams per 100 mils of blood. The 'phthalein excretion was less than 1 per cent in two hours. The specific gravity of the urine was 1012. It was acid and the Bence-Jones body was present, 5 grams per liter.

There was a heavy white precipitate of peculiar silvery luster, found to be composed of greatly elongated rhombic crystals. The heavy deposit of crystals was washed several times with ice water and the following properties were noted by my associate, Dr. F. M. Massie:

(1) They were soluble in warm water at body temperature, soluble also in weak acid and in weak alkali, insoluble in alcohol, ether and chloroform. After solution in warm water coagulation occurred at 55 degrees Centigrade. This was complete at 70 degrees Centigrade and resolution was complete on boiling for several minutes. The precipitate reappeared in amorphous form on cooling. Faintly acidifying the watery solution of the crystals caused more rapid coagulation at 55 degrees, and strongly acidifying it prevented coagulation. The crystals when dissolved in weak acid or alkali could not be precipitated in either crystalline or amorphous form by neutralization, thus differing from the reaction of ordinary metaproteins. Later in the course of the disease the rhombic crystals were replaced by others having the appearance of a chestnut burr of a diameter about twice that of a white blood cell. Elongated rhombic crystals were also present but in relatively small amount, and the burr-shaped bodies, while presumably formed by agglutination of rhombic crystals, had a more homogeneous appearance and did not show the component crystals so clearly as did those of Walters' case.

Roentgenograms of the skull, chest, lumbar region, pelvis and long bones revealed:

(1) In the skull, chiefly in the parietal and frontal bones, numerous sharply defined, circular areas of rarefaction varying from pin point size to 0.5 centimeters in diameter.

(2) In the chest were scattered areas of mottling throughout both lung fields; in the ribs irregular areas of rarefaction and in some instances apparent destruction of the entire thickness of the rib for an inch or more. There was a well defined shadow indicating a tumor mass 5 x 2 centimeters under the right scapula. The continuity of two ribs was lost in this mass.

(3) In the lumbar spine were innumerable small discrete areas of rarefaction, some coalescing into larger areas and numerous similar, but large and irregular, areas in the tenth, eleventh and twelfth ribs.

(4) About the middle of the shaft of the right humerus was an area of high rarefaction 3 centimeters in length with marked thinning of the cortex.

Study was undertaken to determine the effect of protein intake upon nitrogen retention with the following result:

Date	Protein Ingested in Preceding 24 hours, in Grams per Kilo of Body Weight.	In Mg. per 100 Mils of Blood				
		Uric Acid	Urea Nit.	Creatinin	Sug.	P.S.P.
12/19	Gm. 1 (of this Gm. 0.3 in 2 hrs.)	7	32	5	140	less than 1%
12/21	Gm. 0.2 (none in 20 hrs.)		34	7.5		0.5%
12/22	Gm. 2.76 (Gm. 0.5 in 5 hours)		36	7.4		
12/23	Gm. 1.9 (none in 15 hrs.)		34	7.9		

During this time the patient did not vomit and took food with relish. There was no indication of failure of absorption.

On December 24, after 13 days' stay in the hospital, the patient returned to her home in a town some 35 miles away. On January 11 the blood urea nitrogen was 66.5 and creatinin 14.6 milligrams per 100 mils of blood and she died in uremic coma January 16, nine months after the onset of illness.

(1) Two cases of multiple myeloma are reported, both with characteristic x-ray findings and with Bence-Jones proteinuria, one terminating in death in nine months, the other still living and symptomatically in better condition than at any time in the last four years.

(2) Both cases presented very low kidney function evidenced by uremia, high nitrogen retention in the blood and low

'phthalein excretion, but without hypertension.

(3) One of the two cases with greatly impaired kidney function presented very small though definitely demonstrable areas of disease in the cranial bones and lumbar vertebrae. Had these areas been confined to such locations as the sternum and dorsal spine which are frequent sites of the disease and very difficult of satisfactory roentgenography, it is likely that they would have escaped recognition and that the case would have been classed as one of Bence-Jones' proteinuria with nephritis of nitrogen retention type, but without demonstrable myeloma. This case showed a gain of 30 pounds in the last two years with an average daily excretion of approximately 10 grams of Bence-Jones protein. The color index was constantly one or more than one on several examinations, in contrast with the low index of secondary anemia usually present in these cases.

(4) In one of the cases spontaneous crystallization occurred in the urine upon cooling after voiding. These crystals presented the appearance of those previously described by Bramwell and Paton[19] and Walters[17] and Wilson[16] and had the characteristic reactions.

(5) The blood of this case also showed practically unchanged amounts of urea nitrogen and creatinin on ingestion of protein, ranging from 0.2 grams to 2.8 grams per kilogram in 24 hours.

REFERENCES

1. Symmers, D.: Annals of Surgery, Vol. 67, p. 687.
2. MacCallum, W. G.: A Textbook of Pathology, p. 775.
3. Ewing, James: Neoplastic Disease, 2nd Edition, W. B. Saunders, p. 297.
4. Wright, J. H.: Pathological report, quoted by Osgood, R. B., Boston Med. and Surg. Journal, 1923, Vol. 188, p. 380.
5. Wells, H. G.: Archives of Surgery, 1921, Vol. 2, p. 435.
6. Pepper and Pearce: Journal of Medical Research, 1917, Vol. 37, p. 171.
7. Christian, H. A.: Jour. of Exp. Med., Vol. 9, p. 325.
8. Quoted by Rosenbloom, Jacob, Medicine and Surgery, Vol. 1, p. 257.
9. Wallgren, Arvid: Upsala, Laekeref, Foerh 25, p. 113. Examined in abstract only.
10. Cantieri, C.: Policlinico, 1921, Vol. 28, p. 239. Examined in abstract only.
11. Boggs and Guthrie: J. H. Hosp. Bulletin, Vol. 24, p. 368.
12. Boggs and Guthrie: J. H. Hosp. Bulletin, Vol. 23, p. 353.
13. Micheli, F.: Haematologira, 1921, Vol. 2, No. 1, p. 1.
14. Miller, S. R., and Baetjer, Walter A.: J. A. M. A., Vol. 70, p. 137.
15. Rosenbloom, Jacob: Archives of Int. Med., 1912, Vol. 9, p. 255.
16. Wilson, D. W.: Jour. of Bio. Chem., 1923, Vol. 65, p. 203.
17. Walters, Waltman: J. A. M. A., Vol. 76, p. 641.
18. Krauss, E.: Deutsch. Arch. f. klin. Med., 1921, Vol. 137, p. 257.
19. Bramwell and Paton: Lab. Reports of the Royal College of Physicians, Edinburgh, 1892, Vol. 4, p. 47.
20. Bayne-Jones, G., and Wilson, D. W.: J. H. Hosp. Bulletin, Vol. 33, p. 37.
21. Bayne-Jones, G., and Wilson, D. W.: J. H. Hosp. Bulletin, Vol. 33, p. 119.
22. Hopkins and Savory: Jour. of Physiol., Vol. 42, p. 189.
23. Walters, Waltman: Med. Record, Vol. 100, p. 877.

DISCUSSION

Dr. Louis Hamman, Baltimore, Md.—I had the opportunity to observe the first patient reported upon by Dr. Scott. When he was in Baltimore a little over two years ago he was very much emaciated, had a marked anemia and the renal function was seriously impaired. He excreted but 5 per cent of phenolsulphonephthalein in two hours and had marked nitrogen retention. When he left the hospital I felt confident he was going home to die. However, contrary to my expectation, under the excellent care of Dr. Scott, the patient has steadily improved. He has gained thirty pounds in weight and feels better now than he has at any previous time during the past four years. The average duration of the disease after the diagnosis is made is under two years. The longest duration I know of is eight years, one of Kahler's patients having lived as long as that after the diagnosis had been made.

In spite of the fact that Dr. Scott's patient has excreted large amounts of Bence-Jones protein during the past three years the x-ray shows only slight bone lesions. Had the condition not been diagnosed from the urinary findings these bone lesions might easily have been overlooked. However, it is perhaps unfair to gauge the extent of the marrow lesions by the x-ray findings. The x-ray shows only bone absorption and since we know that myeloma often infiltrates the marrow diffusely the disease may really be extensive though the x-ray shows but slight lesions. In spite of having marked renal insufficiency with nitrogen retention neither of Dr. Scott's patients has had hypertension. This remarkable and unusual fact has been noted in other instances of multiple myeloma and it occurs very seldom in other conditions. It might be of some aid to diagnosis when the Bence-Jones protein is absent. The presence of a severe nephritis of the nitrogen retention type without hypertension should suggest a careful x-ray search for myeloma.

The most conspicuous and interesting symptom of multiple myeloma is the presence of the Bence-Jones protein in the urine. The origin of this body is quite obscure and its appearance in the urine most varied. We know only that it has no relation to the protein of the food. Neither the quality nor the quantity of protein consumed has any effect upon the quality or quantity of the Bence-Jones protein excreted. It is not present in all cases of myeloma, and when it does occur it may come early in the disease in small or large amounts. The time of appearance and the amount excreted bear no relation to the severity of the disease. It occurs also in many conditions other than myeloma, in leukemia, marrow metas-

tases, bone injuries, and following the use of drugs that have a profound effect upon the marrow, as pyrodin. However, in these conditions the protein is seldom found and almost always only in small amounts. When a considerable amount of Bence-Jones protein is found in the urine the diagnosis of myeloma is nearly assured. That it has a peculiar chemical constitution that distinguishes it from the protein of the blood and the protein commonly found in the urine is shown by the convincing immunological studies of Bayne-Jones.

The nosological position of the disease is obscure. It belongs to that remarkable group of diseases that stand midway between the leukemias and the malignant tumors. The restriction of the disease to the marrow, its wide dissemination within this system, the rarety of metastatic deposits are features that relate it to leukemia. The circumscribed nature of the local growths and the local bone destruction are features that relate it to malignant tumors. In a classification of the diseases of the bone marrow it takes the position that lymphosarcoma occupies in a classification of the diseases of the lymph glands. The histological picture of the tumors is most varied. All of the marrow cells may take part in the structure or a particular type of cell may predominate. This had led to such terms as myelolymphoma, myeloblastoma, myelocytoma, myelo-erythroblastoma and myeloplaxoma. Tumors clinically and grossly indistinguishable from these may arise from stroma cells, the endotheliomata. The significance of this varied histological picture is not understood. It is generally conceded that genetically the various marrow cells come from a primitive type of cell and the varying histological picture of myelomata might depend upon factors that determine the stage of development of its component cells without implying any fundamental difference in the nature of the underlying disease.

Dr. J. C. Flippin, University, Va.—I saw for only a few minutes a man who had had his appendix removed, gall bladder explored and had been to many physicians. For a year and a half or more he had been having severe pain in the chest radiating to the abdomen. At the time of examination he was extremely anemic. I had no opportunity to make a thorough examination, but the chief facts noted were the extreme pain and exquisite tenderness over the ribs. I followed the case up and succeeded in getting an autopsy after his death. At the examination it was noted that there was distinct dullness in the mediastinal area and this, combined with the tenderness in the ribs, suggested a malignant mediastinal growth with probable metastasis. The autopsy, done out in the rural districts, disclosed a striking thing: the ribs were almost replaced by a fresh cream-colored growth and on the under surface were numerous rounded tumors from the size of a chestnut to that of a hen's egg. The collection of these around the ends of the ribs and under the sternum was responsible for the dullness noted at the time of examination.

Another case that I saw was a man about 50 years of age. He complained at first of symptoms suggesting rheumatic pains in the chest. These were thought to be inconsequential at first, but they returned and then it was noted that he had casts and albumin in the urine. He was studied rather carefully by two competent clinicians and a diagnosis of nephritis was made. Going to a third clinician, it was noted that there were Bence-Jones bodies in the urine. I had an opportunity to follow this case and it progressed in its usual downward course. He was very thoroughly treated with radium, which appeared to relieve the symptoms, but, on the other hand, it produced leucopenia and seemed to increase the severity of the anemia. The duration of both cases was approximately two years.

Recognition of these cases is a very difficult problem. Not all of them show the Bence-Jones bodies at all times, and urinary examinations have to be carried out very carefully to identify them, because the urine may contain both serum and Bence-Jones protein and where the amount of protein is not great it can be easily overlooked.

When a person above 35 years of age comes to me complaining of vague pains, continued or recurring, with progressive anemia, and particularly pains and tenderness about the chest radiating down the spine, I at least think of the possibility of this disease. This is the type of individual in whom we most frequently find myeloma.

Dr. Sydney R. Miller, Baltimore, Md.—In a paper some years ago Dr. Baetjer and I called attention to the apparent occurrence of Bence-Jones protein in patients who showed two characteristic things: hypertension and renal hyperpermeability, as judged by the phenolsulphonephthalein excretion. Of the five cases that we reported at that time, two have died and have come to autopsy, and no trace was found at section or roentgenologically of bone marrow tumors. If these patients were not excreting Bence-Jones protein, it was something so similar that people expert in its detection could not differentiate.

Multiple myeloma is probably much more common than the literature would suggest. I am inclined to believe that it is frequently missed through error in diagnosing the case as chronic parenchymatous nephritis. I would like to suggest that this possible diagnostic error may probably be done away with in part by a little less reliance upon the classical Heller's test, which is employed too exclusively by too many physicians. This test will tell you nothing at all about Bence-Jones protein in the urine. With the heat and acetic acid test, any urine which commences to cloud almost the second it is heated should arouse one's suspicions and prompt the institution of other tests which are characteristic of this unusual protein.

Dr. Harry C. Schmeisser, Memphis, Tenn.—The myelomata stand half way between the leukemias and the tumors. They are composed of the same parenchyma cell as is found in the corresponding type of leukemia and further resemble leukemia

by appearing in many locations at the same time. They resemble the tumors in manifesting a lawless growth, resulting in large accumulations of cells.

It is well known that leukemia occurs spontaneously in animals. It is common in the dog, horse, cow, fowl and pig, rarer in the cat and still more so in the goat, sheep and rat.

Particularly in the fowl it has been most carefully studied.

Both Betterfield and Mohler, in 1905, deserve the credit of showing that leukemia occurs in the fowl. Their studies were limited to post mortem findings.

To Warthin, in 1907, we are indebted for the first complete study of this disease in fowls. He considered the condition in all respects analogous to that existing in man.

Ellermann and Bang, in 1908, were the first successfully to transmit the disease by experimental inoculations from a spontaneous case to other healthy fowls.

On October 31, 1912, while I was a Fellow in Pathology at the Johns Hopkins Medical School, a typical case of myeloid leukemia of the fowl was brought to the pathological laboratory. Starting with this spontaneous case, I was successful in transmitting the disease in other healthy fowls into the fifth generation, keeping the strain running for more than thirteen months. The clinical picture and changes produced in the blood and organs were analogous to those which occur in human leukemia. These studies were published in 1915. In these experimentally produced leukemic fowls there occurred occasionally myelomata, typical tumors, which were analogous to those in the human. They were composed of the cells characteristic of the leukemic infiltrations and were multiple, but otherwise had the characteristics of a tumor.

Interesting is the observation first, that multiple myeloma occur in the fowl; and second, that they appeared during the course of an experimentally produced leukemia.

Dr. Scott (closing).—I wish to emphasize the fact that until laboratory technicians generally can be depended upon to discover the Bence-Jones body routinely the report of a large amount of albumin without casts ought to suggest a special examination for this body. Multiple myeloma is sometimes the cause of severe pain, particularly in the back or referred to the bones. When there is in addition to this a laboratory report of albumin in large amount in the urine without casts, one should eliminate with great care both multiple myeloma and Bence-Jones proteinuria. The suggestion of Dr. Hamman that severe nephritis of nitrogen retention type with hypotension even in the absence of Bence-Jones proteinuria should suggest x-ray search for myeloma is most valuable.

HAIR GROWTH*

By THOMAS W. MURRELL, M.D.,
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Quackery and charlatantism are the result of medical insufficiency. Where the profession falters and has to admit ignorance, cults are born and the nostrum vendor takes his toll. The beauty parlor is, therefore, the reproach to dermatology. Where these places function for the female, as the barber shop does for the male, little is to be said, but there are none which do not as a side line carry a set of nostrums and prescribe treatments for conditions which are pathological.

In the main, these places exist because of the concern of women about their hair. Falling hair to the woman is no less than a tragedy and they are ready and willing to follow any measures which even moderately prove a success. Superfluous hair is even more tragic and the woman so afflicted is never so old or callous as not fiercely to resent it.

How is the average patient treated who comes to the average dermatologist complaining of hair loss? Is it not fair to say that the inspection for and treatment of seborrhea, with scalp stimulant to follow, is about the average treatment? Is it not also the truth that as far as the second prescription is concerned, scarcely is any other prescription written with so little confidence of happy results.

If this be only partially so, the fault is not entirely the doctor's, for medical literature does not constitute the way out. Text books are little more than formularies and the paucity of information from all sources is startling.

Let us consider the hair as it appears from birth. We are born with three kinds of hair: the hair of the scalp, the stiff hair of the eyebrows and lashes, and the fine down of the lanugo. As the child grows and approaches puberty the terminal hair on the axillae and pubes appear, and with

*Read in Section on Dermatology and Syphilology, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

the male, beard on the face and upper lip.

These last are so obviously under the control of the gonads that these other hairs must be under the control of other ductless glands. What are these areas of control and what evidences prove them? Berman, in "The Glands Regulating Personality," states:

"Now the smoothness of the face in children is connected with the activity of the thymus and pineal glands. Among individuals in whom the juvenile thymus persists after puberty, no growth of hair occurs on the face and in precocious involution or destruction of the pineal, hair appears on the face and in other terminal regions in children of six or less. It is probable that these thymus and pineal effects are indirect through their action upon the sex glands. For in the types with persistent juvenile thymus there occurs a maldevelopment of the sex glands, while in those with early recession of the pineal the sex glands bloom simultaneously with the appearance of adolescent hair and mental traits.

"The hastening of sexual hair by tumors of the adrenal gland may also be put down to release from restraint of the interstitial sex cells.

"There are certain spheres in the hair geography of the body over which particular glands may be said to rule, or to possess a mandate.

"The hair of the head seems to be primarily under the control of the thyroid.

"Thus in cretins reconstructed by thyroid feeding the straight, rather animal hair becomes lustrous, fine, silky and curly. In thyroid deficiency of adults, a prominent phenomenon often is the falling out of the hair in handfuls. Baldness is frequently associated with a progressive decrease of the concentration of thyroid in the blood. At the same time there tends to be a thinning of the eyebrows, especially of the outer third.

"The hair of the face in males, and the other terminal hairs of both sexes, are regulated by the sex glands.

"In the female, the ovary, that is to say, the inertitial cells of the ovary, inhibit the growth of hair on the face. In destructive disease of the ovaries, as well as in other affections of it, hair in the form of moustache and beard may appear on the female. That is why in women after the grand sex change of life, the menopause, hair often grows in the typically male regions because of less of the inhibiting influence of the ovarian secretion upon them. After castration of the ovaries the same may result. Removal of the male sex glands, or disturbance of them, will interfere with the proper development of the normal facial hair.

"Of the hair of the chest, abdomen and back the adrenals seem to be the controllers.

"Adrenal types have hairy chests in males and hair on the back in females. They also have a good deal of hair on the abdomen.

"The hair of the extremities varies a good deal with the pituitary.

"People with hair on the hands, arms and legs alone are generally pituitary or have a striking pituitary streak in their make-up.

"When the adrenals increase in size in childhood a remarkable triad occurs: general hairiness, adiposity and sexual precocity. One fact should be noted—when the adrenals evoke precocity and an early awakening of the secondary sex characteristics, it is a masculine precocity and an approximation to the masculine, even in the female. There is a definite trend toward an increase of the male in the individual's composition at the expense of the female. In general, the degree of general hairiness is an index to the amount of adrenal influence upon the organism. All the endocrines which affect the growth also act upon the sebacious glands."

My interest in this subject has chiefly arisen from the case histories of those women who have come for the removal of superfluous hair. In practically every instance there has been some distinct abnormality of the menstrual function.

The following brief history is typical:

M. M., a trained nurse, age 28, came with three patches of stiff black hairs on the chin. She positively stated herself to be normal in every way. Her first visits were in the early spring. In August she called attention to the fact of a growth appearing over the sternum between the breasts. She then informed me of her menses having become so scant as to be practically absent. She was referred to a gynecologist, who reported distinct ovarian changes of a sclerotic nature.

The fact of there being a latent male in every female was discussed by this same gynecologist with me, from the standpoint of sexuality. He stated that he had noticed on opening up surgical pelves in cases of women who had also complained of frigidity that the ovaries were usually very large. He thinks that hypersexuality on the part of women is the expression of the latent male released by inactive ovarian secretion.

Swale and Vincent state:

"In some female animals removal of the ovaries has been stated to lead to appearance of male characteristics. These cases are difficult to explain on any other hypothesis than that secondary male characteristics are normally present in a latent form in the females and that the ovaries exert an inhibitory influence over their development."

The foregoing suggests the thought that previous to puberty human beings are male and that the differentiation in the type occurs only when the ovaries begin to function. This is an unusual thought, but if true is explanatory of many things.

Sutton, in his classification of the alope-

cies, places changes in the internal secretions among the local causes and gives as constitutional causes general toxemia, mineral poisons and general cachexias. If hair growth is dependent upon gland secretions may not these toxemias, etc., produce their effect, not upon the hair, but upon the gland which controls the hair? For example, may not the hair loss of typhoid be due to the effect of typhoid on the thyroid and its secretions? It would certainly seem that hair loss and superfluous hair growth should be approached from an internist's point of view and those remedies used as local applications be a subsidiary part of the treatment.

The rate of hair growth has been stated to be practically the same at the different periods of life, but probably is faster in warm weather than in cold. Many men have stated to me they have to shave less frequently during the winter. It is an impression of a number of men that sweating tends to increase hair growth, though this is probably due to the congestion of the skin, which in producing the sweat at the same time makes for greater nutrition. It is generally believed that cutting the hair or pulling it out tends to make it become coarser and stiffer. This certainly seems true as far as the beard is concerned. On the other hand, a medical missionary has informed me that he has examined the scalp hair of a number of Chinese who have abandoned the queue and allowed the hair of the scalp to grow. It was the custom for the Chinese to shave that part of the scalp not necessary for hair to make the queue and, of course, this hair had been shaved for many years, yet when allowed to grow no difference could be seen in the original queue hair and the other hair of the scalp as to its quality or texture.

How far can we honestly say we have stimulated hair growth by local applications alone? Formulas are usually given with directions for rubbing, which may well produce what good that ensues by causing a better circulation. It is evident that some sclerotic change takes place in that part of the scalp which overlies the tendon of the occipito-frontalis muscle; for seldom does baldness of the ordinary type occur over the occipital and temporal regions. A scalp wound on a head bald for many years scarcely bleeds at all so compressed is the blood supply. Massage which may loosen this cap of skin should do some good and in the same way the production of the hyperemia by chemicals or by heat should increase nutrition.

I am convinced that the convalescence of alopoecia areata is materially shortened by the use of the ultra-violet light and in several cases with men I have succeeded in producing a downy growth of hair which I am convinced was due to this agent. In many more, it has failed completely to produce a result. I am still unable to give an opinion of its value. Of course, in those cases where hair loss is due to local pathology, definite results are obtained and in the young and adolescent the hair seems to reassert itself. But in those in the third and fourth decades of life even the removal of the local cause does not assure the return of normal hair.

I am aware that nothing is said here to add to the total knowledge of the subject. It was chosen because it constitutes a daily obstacle and the discussion by abler and more experienced workers may throw light upon it.

DISCUSSION

Dr. C. Augustus Simpson, Washington, D. C.— The question of the association of hypertrichosis with certain hypo or hyperglandular conditions has interested me for some time. Two of my earlier cases of hypertrichosis which we despaired of ever curing proved to be the easiest cases I ever handled dermatologically. I noticed no special distribution of the growth of hair in either patient except that the growth was very marked. Both patients were exceedingly repulsive for this reason. Both showed unmistakable signs of cretinism. On first seeing them I thought it was hopeless ever to try epilation on them with an electric needle. They were both on thyroid extract, so I decided to try an experiment. I had the patients pull the hairs out with tweezers, and I also pushed the doses of thyroid extract to the point where both patients were toxic from the drug and to my surprise in neither case have the hairs returned. The mentality of both patients also improved to the point where they both secured good positions. That was several years ago.

I have a patient at the present time who has an extensive growth of hair on the chin and upper lip, and the metabolism tests show that his metabolism is 14 minus. This is a rather important point in bringing out the etiology in some of these cases. I will try heavy toxic doses of thyroid and pulling the hairs for this new patient. But the other cases have changed from hopeless human beings that were shunned by society, that you did not like to have in your office, to normal, pleasant looking people.

The question of hair growth is the weak point in the armamentarium of the dermatologist. I cannot see, unless we can increase our knowledge of pathology and bacteriology, so as to give to our patients some positive prognostic and etiologic points in this disease, why they will not go to the hair dressers in increasing numbers. Today many hair dressers can give almost as good treatment as the doctors themselves. They are equipped with Alpine lamps and they give some general directions as to hygiene.

Dr. L. K. McCafferty, New York, N. Y.—Dr. Saboraud's recent book devotes the first chapter to the relationship of the growth of hair and the genital organs. Dr. Saboraud made the statement that in about 350 eunuchs whose history he had been able to obtain from various men who had investigated this question, none had lost the hair, excepting one, and he had alopecia areata. He also stated that several women whom he had been treating from time to time for alopecia and who later were operated upon for the removal of their ovaries did not return for their alopecia. He believed that possibly the removal of the ovaries had something to do with the cessation of the loss of their hair.

Dr. I. L. McGlasson, San Antonio, Tex.—I do not believe climate has anything to do with hair growth. My observations in San Antonio are not different from the clinics in the North and East. In the peculiar and difficult condition of hypertrichosis, thyroid treatment sometimes gives beautiful results.

Dr. Andrew L. Glaze, Birmingham, Ala.—A point that has bothered me is the fact that hair, after it grows out, is considered to be a more or less an inert substance. Hair cut off and lying on the table is supposed to have just about as much life as when it is *in situ*. But the eyebrows and other kinds of hair over the body come to a maximum growth and stop there. When hair is cut off, what informs the physiological processes that it is time to grow until the shaft has again reached its proper length? One is forced to wonder if there must not be some link, some low grade type of life, some physiological connection between normal, healthy hair and the hair bulb.

Dr. Murrell (closing).—Over fifteen years ago, when I was in general practice, I had a patient who, after an operation, had a general septicemia and was sick for about three months. When she was nearly well she said one day, "I have something peculiar here," and showed me that on the thighs to below her knees there was a growth of hair nearly an inch long. I had never seen anything like it before, and thought it was due to the excessive sweating during her illness. Several months after I asked her about it and she said that as soon as she regained her health it dropped off.

A year ago I saw a case, a young man who had his knee baked for arthritis. The knee was wrapped constantly and baked, and one day he showed me that the knee that had been baked and sweated was covered with hair. The knee that had not been baked had no growth of hair at all.

TROPICAL DISEASES AND PUBLIC HEALTH

DIPHTHERIA CONTROL*

By C. C. HUDSON, M.D.,
Health Officer,
Richmond, Va.

The progress which has been made during recent years in measures for the control of diphtheria is a source of gratification to every member of the medical profession, and especially to that part of the profession which is interested in public health work. We have now reached the position where we can, by the application of the methods at hand, absolutely control the mortality from this at one time severe scourge of childhood.

Fortunately, we have on file in the Richmond Health Office the annual reports of the President of the Board of Health and later of the Health Officer for each year since 1872. It is very interesting to review the reports of the 'seventies and 'eighties and see the recommendations which were made at that time for the control of diphtheria. The first recommendations for the control of this disease were made in 1876, when the President of the Board of Health recommended that diphtheria be made a reportable disease. However, action by the form of government then in power must have been very slow, as it was 1885 before an ordinance was finally passed requiring physicians to report cases of diphtheria.

In considering the control of diphtheria it is well to consider the following:

(1) What has been done to secure adequate treatment of diphtheria cases and thereby prevent deaths from this cause.

(2) What we have accomplished in controlling the spread of the infection.

(3) Passive immunization.

(4) Active immunization.

In discussing what has been accomplished in securing adequate treatment and thereby preventing deaths from diphtheria, I submit the accompanying chart, showing the average death rate from diphtheria in Richmond, Va., by periods, since 1876.

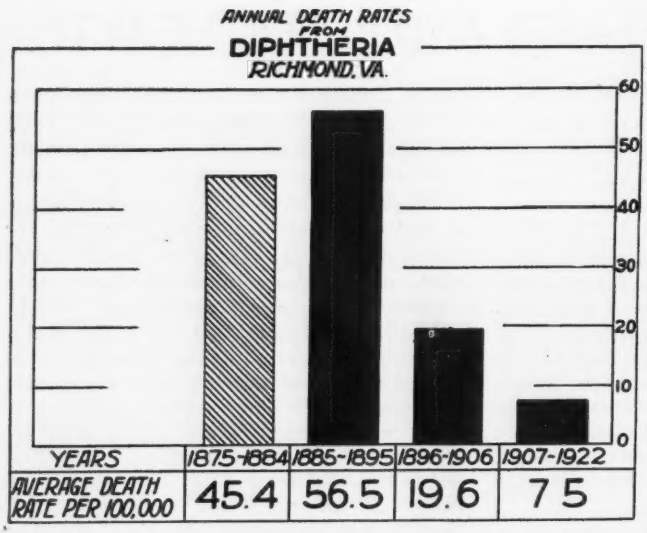
This chart shows an average death rate of 45.4 per 100,000 population for the ten years, 1875-1884. In 1884, Loeffler definitely proved that diphtheria was a germ disease. During the eleven-year period, 1885-1895, inclusive, this being the period immediately preceding the general use of antitoxin in Richmond, the average death rate was 56.5. The severe epidemic of 1891, with a death rate of 177.4, occurred in this period. Between 1895 and 1906 antitoxin was in general use and some provision was made for its free distribution to indigent cases. Cases of diphtheria were placarded and released when the attending physician thought it safe to do so.

With the reorganization of the Health Department, which took place about the middle of 1906, very active work for the control both of cases and deaths was begun. Measures then put in force have been gradually improved until at the present time our procedure for securing adequate treatment of diphtheria cases is as follows:

(a) Free antitoxin is available for the treatment of any case of diphtheria, provided the family physician considers it a hardship for the family to purchase the serum. The City Health Bureau is very liberal in the interpretation of this rule, and as a result most of the antitoxin used in the City is supplied free. In addition to providing the means whereby all cases of diphtheria may secure adequate treatment, it gives the City Health Bureau a check on all possible cases in the city.

(b) Laboratory facilities are available for the examination of specimens by physicians. During recent years examinations of cultures have been regularly made in the morning and in the evening at 8 p. m. Direct smear examinations are also made upon request. Although we have adequate laboratory facilities, we do not advise physicians to depend upon the

*Read in Section on Public Health, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.



laboratory for diagnosis before giving antitoxin. The following is printed in red type on every laboratory blank: "Do not await results of cultures, but give antitoxin at once if at all in doubt."

(c) In 1907 an intubation service was provided. Intubations are usually performed in the home without the services of a trained nurse. The results from this service have been very remarkable, as we have had a case fatality of only 14.4 per cent of all cases intubated since this work was begun in 1907. Many septic cases which were practically moribund when intubated are included in our fatality list.

(d) Any physician may, upon request, have the Medical Inspector in consultation. In severe cases the Medical Inspector often administers antitoxin intravenously at the request of the family physician. As early as possible after the reports of cases of diphtheria are received at the Health Bureau, an investigation is made by the Medical Inspector. During this investigation, if he finds that an insufficient dose of antitoxin has been administered, the matter is taken up with the family physician.

(e) While we have no regular communicable disease hospital, we have a few beds at the City Home which can be used for the isolation and treatment of cases where it is impossible to care for them properly in the home.

For several years a careful check has been made of each fatal case, in order that we may determine the reason for the death: whether it was due to failure of the parent to call the physician in time, failure of the physician to give antitoxin as early as he should, his failure to give a sufficient dose of antitoxin or delay in calling for intubation in laryngeal cases, or whether the death has been due to other causes. We find most deaths coming in the first two classes. Our case fatality during the last sixteen years has averaged 4.2 per cent, the highest fatality being 9.9 per cent during 1907 and the lowest 1.8 per cent in 1908. Since 1907, the highest case fatality was 6.3 per cent in 1918.

In controlling the spread of the infection, in addition to the hospitalization of a few cases, as mentioned above, we employ the following measures:

(1) The patient, nurse and all children under fifteen years of age are quarantined in the home, except in cases where the children may remain away from home during the period of quarantine. In these cases children are released from quarantine after two successive negative cultures, taken at 24-hour intervals, one of which is taken before the child is allowed to leave the premises. Carriers are treated in the same manner as cases, unless the germs are non-virulent.

(2) Strict isolation in the home of the patient and, when possible, of the nurse is insisted upon. Verbal instruction is given by the Medical Inspector and a pamphlet giving the precautions to be observed is left with the nurse.

(3) No patient is released from quarantine until we have secured two successive negative cultures, taken at not less than 24-hour intervals, from the throat and nose of the patient, and one negative

culture from the other inmates of the home.

(4) An epidemiological study is made of every case in an effort to find the source of infection. Cultures are taken of all those who have come in contact with the patient. We also inquire as to suspicious sore throats, sore noses and children having skin sores living in the vicinity. Cultures are taken from such cases. In this way we find many carriers. When two cases develop in any school room, cultures are taken from all the children in this room. Occasionally we have indications of a school spread and find it necessary to culture several rooms in a school. A careful check is also kept of our milk supply, but as practically all milk sold in Richmond is pasteurized and bottled by machinery, we have had no trouble from this source since 1908, when a small outbreak was traced to milk.

(5) Cases of skin diphtheria are allowed to continue in school, provided the sores are dressed in a satisfactory manner and provided the nose and throat cultures are negative.

(6) Food handlers living on the premises are only allowed to return to work provided they can remain elsewhere, and after a negative culture has been secured from the throat and nose. Teachers and other adults coming in contact with groups of children are dealt with in the same manner.

(7) Cases in institutions are either removed or strictly isolated and all inmates cultured at once. The cultures are repeated 24 hours later. Any carriers found are isolated and immunized.

(8) Immunizing doses of antitoxin are supplied for the protection of non-immune children in the home.

(9) All cases are immediately reported to the school authorities. The school nurses culture all possible contacts in the school.

(10) All teachers are instructed in regard to the importance of having the school nurses or the school physicians examine every child who has been out of school on account of a sore throat, or who has a sore nose or skin sores. This results in finding a number of carrier cases each year.

(11) Circular letters are sent to physicians from time to time giving advice in regard to different phases of diphtheria work. News items are given to the press during the diphtheria season warning the public to be on the lookout for croup, sore throat, sore noses among children, and to have the physician examine such children at once.

In addition to the above, we have been attempting to educate the public as to the importance of eliminating the roller towel, the common drinking cup, the importance of keeping the hands clean, and children in the public schools to the importance of keeping fingers, pencils, etc., from their mouths and noses. Through our Food Division we have been attempting to secure proper sanitation of soda fountains, either by having them use paper cups or by having all glasses sterilized either by placing them in a chlorid of lime solution, by steaming or by boiling, and also the sterilization of dishes used in restaurants.

Several years ago antitoxin was used more extensively for the passive immunization of children exposed to diphtheria cases than at present. It is certainly advisable to administer a small dose of antitoxin to children in homes where it is impossible to secure proper isolation of the patient. As the duration of immunization produced by antitoxin is so short, when it is possible to secure satisfactory isolation, we do not use passive immunization but advise watching the children and having physicians see them at once in case of any signs of diphtheria.

Measures designed to control the spread of the diphtheria germ have not shown entirely satisfactory results. Some years our case rate is low and we seem to be making progress, and then we get a more virulent germ and the rate begins to go up. The average case rate during the years 1907-1911, inclusive, the first five years following the beginning of active health work in Richmond, was 180.4 per 100,000 population, while the average case rate for the last five years, 1918-1922, has been 214.8. The latter period includes the rather high rate of 1920, in which year there seems to have been a general in-

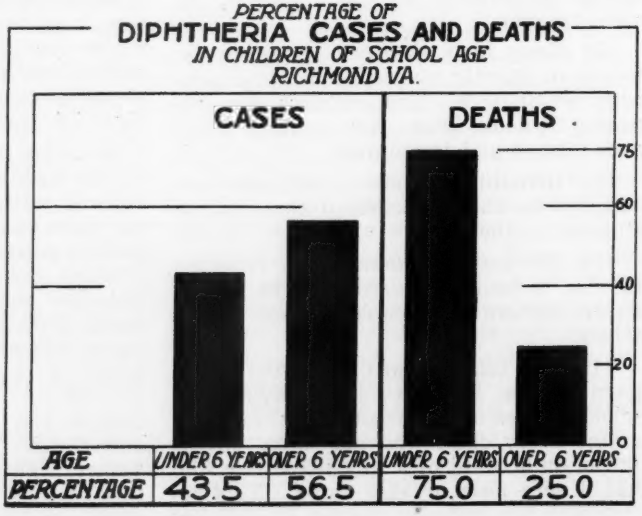
crease in the prevalence of diphtheria. There is no doubt that many nasal infections are now carried as diphtheria cases which would not have been so carried during the earlier period. However, we do not know what the case rate would have been but for our work.

During the last three years we have been paying some attention to active immunization by means of the Schick test and toxin-antitoxin. By the use of these preparations it is possible to find those susceptible to diphtheria and to render them immune. Both are apparently entirely free from danger, almost painless, and toxin-antitoxin seems to give permanent protection. The only question is how to apply this method so as to reach every susceptible person in the community. In applying this means of diphtheria control, the first problem which confronts us is where to begin work. The public school affords the most readily available material. Here large groups of children may be given the Schick test and the non-immunes immunized. In addition to the protection which they receive, we prevent the loss of time from school on account of quarantine of the child and others in the home. These children have reached an age at which permission to apply the method may be more easily secured. It also gives a ready approach to the home for the education of the parents in regard to the value of toxin-antitoxin. However, most of our deaths from diphtheria are in children under school age.

As may be seen from the accompanying chart, only 43.5 per cent of all cases of diphtheria in Richmond occur in children below school age, while 75 per cent of all deaths occur during that period. The immunization of all school children would prevent more than half the cases of diphtheria in the city, but it would prevent only one-fourth of our deaths unless the immunization should prevent a part of the school children from becoming diphtheria carriers and thereby prevent the infection of the younger children in the homes.

The ideal age for the immunization of the child is apparently at the end of the first year of life. This age is the earliest time in life at which the body tissues respond successfully to the infection of toxin-antitoxin. We are therefore advising all physicians who come in contact with babies to attempt to immunize them during the latter part of the first year of life by giving the three inoculations of toxin-antitoxin and then testing the child at the end of six months to see whether it be immune to diphtheria or not. We are also advising that all children below school age be treated in this manner. Our aim is to have every baby given toxin-antitoxin before it reaches its first birthday.

Various methods are used to secure these inoculations. First, general education through news items, public addresses, pamphlets, exhibits, etc. In addition, means are provided for giving the inoculations particularly to people in the poorer walks of life. This is done either by furnishing toxin-antitoxin and the Schick test outfits to physicians or by using the physicians and nurses already doing public health work. All children in infant homes, day nurseries, and those attending infant welfare clinics afford groups where a



number of children may be reached at small expense. Toxin-antitoxin is available either free or at small expense for the use of any physician. Many state health departments have been supplying Schick test outfits and toxin-antitoxin for several years.

In 1796, or 117 years ago, Edward Jenner, the great English physician, discovered an absolute means of controlling smallpox. We still have this disease with us from time to time. We have in the United States at the present time many active cults, paths and isms which are trying in every way to destroy the confidence of the public in the medical profession. Many of the members of these organizations are well meaning people who have fallen under leaders who often do not hesitate to misconstrue and garble statements made by prominent physicians so as to meet their ideas. They resort to any means whereby they may keep their members and secure the money which they give. All public health officials are constantly coming in contact with members of these organizations, especially whereever compulsory vaccination of school children is enforced. We look with horror upon these teachings, as we know that they may mean death to some innocent child. We may expect the same active opposition to use of the Schick test and toxin-antitoxin, especially if, as we hope it will be in the future, it is made compulsory for school children. However, if public health officials and physicians push this means of protection with sufficient vigor, the opposition can be overcome in most instances and the public thereby may be protected.

In conclusion, I desire to urge that we should at present continue the methods which we have used in the past, especially those which have been proven of value in curing the cases of diphtheria and thereby preventing deaths. We should not lessen our attempts to control the infection and prevent the spread of diphtheria. In addition, however, every public health official and every physician should do all possible to secure the protection of as many children as possible by the use of toxin-antitoxin and thereby limit the necessity for the other measures.

DISCUSSION

Dr. George C. Payne, Richmond, Va.—In the State of Virginia we are very much behind Richmond on the death rate and we find that it is very expensive and very troublesome, even in the near urban areas, to control diphtheria when it becomes epidemic. In our rural areas, where our death rate piles up, the control by orthodox cultural methods is impossible, and there we are trying to encourage the use of toxin-antitoxin. While we believe that toxin-antitoxin is of proved value, still the methods by which we can bring it into use in the rural areas is a matter for cautious experiment. We have not been able to bring about its use in quantities in which it would do any good in counties where there is not some person who is continuously working at some public health endeavor. If there is only one nurse, if she is interested in diphtheria, she can effectively bring about the use of toxin-antitoxin. One school nurse handled a campaign among about fifteen hundred last year in about six weeks. We do not yet know what effect this will have, but we believe it will reduce the amount of diphtheria by reducing the number of mild missed cases that are never quarantined and by increasing the number of immunes.

Dr. John F. Hogan, Baltimore, Md.—From 1917 to the present date we have made a study in Baltimore of all the deaths from diphtheria as the death reports came in, and it has been found that from 1917 to 1921, 82 per cent of all the deaths from diphtheria were of the laryngeal type. We all realize that laryngeal diphtheria after the fifth or sixth year of life necessitating intubation is rare. The vast majority of cases needing intubation occur in the third year of life. Physicians in hospitals know they use more three-year tubes than any other size and we all know that the critical period is from two to five. I think that chart on the school age and the pre-school age is the most striking thing I have ever seen. Our problem is under the sixth year, and, generally speaking, we have practically no problem under the sixth month. One rarely sees diphtheria in the first year of life. From the first to the fifth year is the time. We should have children immunized before they reach the first year, or certainly before they reach the eighteenth month. I have found in practical daily dealing with physicians that many of them are a little shy about immunizing children with toxin-antitoxin because they know they are not familiar with Schick readings or Schick findings. We are issuing propaganda to the physicians not to mind the Schick test, but to give the children the toxin-antitoxin. It is true that in the first toxin-antitoxin treatment there is about 10 to 15 per cent of failures, but if that 10 or 15 per cent does get diphtheria it will be so mild that it will not be of any great consequence. After the fourth year we do get some toxin reactions. I

am thinking now of requesting physicians to give toxin-antitoxin in broken doses between the ages of four years and nine years: that is, instead of giving a whole mil, give 0.5 mils, and if the individual does not show any susceptibility with 0.5 mils, give 0.75 mils next time. Then if he does not show any reaction a whole mil can be given. In that way we have been immunizing adults, physicians, surgeons and nurses.

CONTROL OF HOOKWORM DISEASE IN SOUTH ALABAMA*†

By W. G. SMILLIE, M.D.,
Andalusia, Ala.

Hookworm disease is prevalent in certain portions of the Southern states, particularly the sandy coastal plane of North Carolina, South Carolina, Georgia, Alabama, Mississippi and Florida. This fact is common knowledge and many efforts have been made to control the ravages of the disease, with notable success. Typical cases of severe hookworm disease are not commonly seen, except in the more isolated rural "piny woods" sections. The hookworm infection rate has not shown a marked decline, except in certain selected areas where intensive sanitary measures have been employed.

Our knowledge of the life history of the hookworm has been greatly increased by the work of Cort, Payne,[1] Augustine, Stoll and their co-workers, and observations made in Brazil by Darling[2] and Smillie have given us some suggestions as to more practical, efficient and economical methods of hookworm disease control. These latter observations in regard to hookworm infection and disease seemed to establish certain definite principles in regard to hookworm control which were of great practical importance to the administrator who had charge of hookworm disease eradication. These principles held for Brazil, and it was thought that the same principles might be of general application in sub-tropical as well as in tropical countries. It seemed particularly worth while to observe hookworm infection in the Southern states from this new angle of approach.

Covington County, South Alabama, was chosen as a suitable place for this study, chiefly because its soil, climate, social life, customs, etc., were characteristic of the whole sandy coastal plane, and because very little hookworm eradication work had been done in the County.

In approaching the study of hookworm disease in South Alabama, we were influenced in part by observations that we had previously made in Brazil. These may be briefly stated as follows:

(1) A distinction must be made between hookworm infection and hookworm disease. Light hookworm infection may be and commonly is acquired casually by all classes of people in a zone infected with hookworms. Actual hookworm disease, that is, an infection which is severe enough to be of real harm to the individual, occurs only in that group of individuals in the infected area whose bare skin has long and continuous contact with infected soil.

(2) Massive infection from a single or occasional exposure to hookworm infested soil is rare.

(3) Hookworm infection is slowly acquired and slowly lost. Thus a severe degree of infection is rare in a child under five years of age, even in a heavily infected zone. The number of hookworms harbored by a child do not increase and decrease with each season, but increase gradually in number year by year. As a rule, therefore, the older the child the heavier the infection, other things being equal.

(4) Shoes are an effective prevention against hookworm infection. When a boy or girl of fifteen years begins to wear shoes constantly, he acquires no more hookworms, and those he is harboring gradually run their life span and die. Since the average length of life of a hookworm is five to six years, the individual is almost entirely free from infection by the time he reaches twenty-one years of age.

(5) One treatment for hookworm disease, if properly administered, will remove over 90 per cent of all hookworms har-

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*Read in Section on Public Health, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

†This study was conducted under the joint auspices of the International Health Board and Alabama State Board of Health.

bored. If the mass of heavily infected persons in a hookworm zone are given one treatment only, hookworm disease can be controlled for several years, thus giving time for sanitary measures. The hookworm infection rate will not be materially reduced by this mass treatment.

If we observe the habits and customs of the people in those portions of the Southern states which are infested with hookworm, we note that soil pollution is almost universal in the rural districts, and even in the outskirts of the towns. The center of the towns is usually well sanitated. (In some states this lack of sanitation in the rural districts is happily undergoing a rapid improvement.) The adults constantly wear shoes. This is true both in the towns and to a great extent in the rural districts. The young men and women usually begin to wear shoes at about fifteen years of age. Most boys and girls, regardless of the economic status of their parents, go barefoot through the entire warm season. There are many exceptions to this rule, but in general it holds.

If the principles in regard to hookworm infection observed in South America, which have been summarized above, also hold true for those portions of the United States in which those factors exist which are favorable to hookworm infestation, namely, favorable climate, favorable top soil for larva development, and continuous soil pollution, we would expect to find:

(1) Adult town dwellers who wear shoes and live where soil pollution is not universal would show only a small per cent of hookworm infection (less than 10 per cent) and the average number of worms harbored by them would be very small, less than ten worms per infected person.

(2) The children of town dwellers who go barefoot throughout the summer and are exposed from time to time to infected soil would show a fairly high infection rate, perhaps more than 50 per cent, but the average number of worms harbored would be small. Actual hookworm disease would be rare.

(3) Adults living in the rural districts where soil pollution is universal, but who are protected by shoes, would show a high infection rate, but the average number of worms harbored would be small. The only exception to this rule would be young adults that had been wearing shoes only three or four years. Actual hookworm disease would seldom be seen in the adults living in the rural districts except in young adults sixteen to twenty years of age.

(4) Hookworm disease, that is, an infection which is severe enough and widespread enough to be an important economic factor in the lives of the people, should be found almost exclusively in the rural children of school age (six to sixteen years) because their bare feet are almost continuously exposed to the hookworm infected soil throughout the warm season of the year.

After one year's observation in Covington County, it seems perfectly clear that the general principles in regard to hookworm infection and disease that were observed in Brazil apply also to South Alabama, and that the hypothesis that severe hookworm infection occurs almost exclusively in rural children of school age is correct. This has been shown by large numbers of ova counts and worm counts.

We have found that the infection rate in adult town dwellers in Covington County is less than 10 per cent. About 45 to 50 per cent of the children in the town schools are infected in Covington County, but the degree of infection is slight. All severe cases of infection found in the town schools are children who live in the country and drive to the town school or rural children who have recently moved to town. Not a single case of heavy hookworm infection has been seen in the children of actual town dwellers.

Adults from the rural districts frequently show hookworm infection, but actual hookworm disease is not common in rural people over twenty-five years old. Heavy infection is also rare in rural children under five years of age.

In the rural children of school age, however, the hookworm infection rate in Covington County is 99 per cent and many of these children have a very heavy infection.

It is not at all rare to find a child of twelve years harboring one thousand

Necatores americani, and clinical cases of severe hookworm disease are seen in every rural school.

We may conclude, therefore, that hookworm disease in South Alabama, and I believe in the whole sandy coastal plane of all the Southern states, is essentially a disease of the rural school child. If this is true, the disease may be controlled by devoting our attention to this age and class group.

It is true that sanitation alone will control hookworm disease, but this method is extremely slow. To be effective, at least 80 per cent of the rural homes and all the rural schools must have sanitary toilets, and these must be used. This necessitates the changing of habits and customs of a life time and can scarcely be accomplished in a decade. The present generation of rural school children will be severely handicapped, therefore, if one's efforts are limited to sanitation. There is a much simpler and more rapid method for the control of actual hookworm disease.

Hookworm disease can best be controlled by mass treatment of the heavily infected group of individuals. One single treatment of the rural school children will reduce the actual number of worms harbored more than 90 per cent. New infection is slowly acquired. The children are relieved immediately of the great burden they have been carrying, and sanitary measures can be undertaken to prevent reinfection.

It is perfectly understood that the hookworm infection rate will not be materially reduced by one or even two hookworm treatments. In my opinion the hookworm infection rate in any zone will never be permanently reduced by hookworm treatment alone. In brief, we may establish the axiom that hookworm treatment should be used to control hookworm disease; the infection rate is controlled by sanitation.

Having once established the age and class groups in Covington County which were heavily infected with hookworm, the County Health Unit worked out a plan of hookworm control, using the rural school as the unit of control. The general plan was as follows:

(1) Interest was first awakened in sanitation by lantern slides, lectures and entertainments at the school.

(2) We promised to examine and treat the children for hookworm after two sanitary toilets were installed at the school. The sanitary inspector helped to install the toilets, furnishing concrete forms, etc.

(3) When the sanitary toilets were installed in the school the children were given a physical examination and their feces were examined for hookworm ova. Almost all were infected.

(4) All children, whether severely or lightly infected, were given treatment at the school. The children came to school without their breakfast. The treatment was as follows:

7:00 a. m.—Carbon tetrachlorid two parts.
8:00 a. m.—Chenopodium one part.
9:00 a. m.—Magnesium sulphate.

A total dose of 0.1 mils of the two drugs per year of age was given. For example, a child of fifteen years was given 1.0 mil of carbon tetrachlorid at 7 a. m. and 0.5 mils chenopodium at 8 a. m., a total of 1.5 mils of the two drugs. One treatment was given at each school.

Nearly three thousand children have been treated in this manner and about eighty sanitary cement slab toilets have been installed in the rural schools. In no instance has there been a case of intoxication from the treatment among the school children.

The next step in control work is the installation of sanitary toilets in the homes with re-treatment of the children within two to three years.

We believe that this method for the control of hookworm disease in the Southern states is sound, both from the scientific and administrative point of view. The work should be carried out by the full-time health officer and his nurse and inspector as part of their routine duties. It should not be considered as a hookworm campaign, but a part of the daily school routine during the winter months, and should be stopped in the summer when the country children are scattered at work on the farm.

Because of compulsory education, all the rural children of school age are regis-

tered in the schools and thus we can readily reach the entire age group which is really being harmed by the disease. It is needless to say that one big problem in hookworm control from the administrative point of view has been the high per capita cost of treatment because of inaccessibility and other difficulties in reaching those persons who need treatment most. In working through the rural school as a unit, however, we have our heavily infected cases all collected for us and ready for examination and treatment.

It is not only unnecessary but fruitless to attempt to treat all cases to a cure. One treatment will remove 90 per cent of all the worms harbored. The most heavily infected may receive a second treatment, but in no instance should more than two treatments be necessary in any one year. It will be necessary to re-treat the children of school age every two or three years until sanitation is well established. As sanitary toilets are installed in the rural districts, the hookworm infection rate will gradually decrease. When the infection rate of the rural school children reaches 25 per cent, there will be no hookworm disease in the community and hookworm treatment may be entirely stopped.

It is important to note at this point that where the sanitarian finds, on his initial survey of an area, that the hookworm infection rate in the rural children of a school age is 25 per cent or less, then hookworm disease is practically non-existent in the community and no treatment need be given; for hookworm infection can readily be controlled by routine sanitation. When the installation of toilets reaches at least 80 per cent of the rural homes, the hookworm infection will gradually disappear without any treatment at all.

It is clear, therefore, that the measures to be employed in hookworm control must vary with the intensity of infection of a given zone. The degree of intensity is measured by the ova counts and also worm counts of the age and class groups most exposed to infection. Mass treatment is then employed in the heavily infected group, relieving them of their burden, and reducing the intensity of fresh soil pollution tremendously. Sanitation and education are employed to reduce the hookworm infection rate to a final vanishing point. Treatment need not be used at all where the infection rate is so low that it can be readily controlled by sanitation.

CONCLUSIONS

(1) Hookworm infection is widely distributed in all ages and classes of people in the sandy coastal plane of South Alabama.

(2) Hookworm disease, that is, infection so severe as to be of actual harm to the individual and so widespread as to be of economic importance to the community, is limited to rural children of school age.

(3) Hookworm disease can be almost entirely eradicated from a given county in a single year by mass treatment of the rural school children. This does not require an expensive hookworm campaign, but should be effected through the routine activities of the full-time county health officer and his nurse.

(4) The hookworm infection rate will not be reduced by this method of mass treatment. But hookworm infection is never permanently reduced by treatment. Hookworm treatment should be used to control actual hookworm disease. Sanitation should be employed to reduce hookworm infection.

(5) Sanitation measures should be begun in conjunction with the hookworm treatment and should be pushed consistently until at least 80 per cent of the rural homes have sanitary toilets.

BIBLIOGRAPHY

1. Cort, Payne, Augustine, Stoll and Associates: Investigation on the Control of Hookworm Disease. The American Journal of Hygiene, thirty-two articles, 1922-1923, Vols. i, ii, and iii.
2. Darling and Smillie: Studies Upon Hookworm Infection in Brazil. Monographs of the Rockefeller Institute, Nos. 14 and 17, 1921 and 1922.

DISCUSSION

Dr. W. S. Keister, Charlottesville, Va.—We are confronted still with hookworm infection, but not so much with hookworm disease. We now no longer see a large number of typical cases of hookworm disease. Formerly in traveling through the country or in passing by railroad stations on the trains, in some sections of Virginia, Alabama and North Carolina, it was quite common to see the emaciated, pale children with winged scapulae and "pot bellies" that we knew

had hookworm disease. It is not easy to find those typical symptoms now, and if we do there are other things to be taken into account.

Certain sections of Virginia are primarily infected and others are not infected at all. It occurs in spots. The incidence is about from 5 to 15 per cent in the counties where there is enough hookworm disease to take account of. In some sections there is 25 per cent infection; in other sections the incidence is very low.

It is rather striking that in sections where there is limestone we find little, if any, hookworm disease, although other intestinal parasites occur there in about the same proportion as under different geological conditions. In Wise County a few years ago, in making examinations, we found 71 per cent of the people infected with intestinal parasites, some having as many as five. In the adjoining County of Russell, where the limestone comes up to meet the sandstone, in some several thousand examinations we found only 2 or 3 per cent of hookworm infection. I do not know why that is, unless limestone, or the lime in the soil, has some inhibiting action on the hookworm larvae. Both were mountain sections, where we are taught to look for hookworm.

The South was fortunate in some respects in having hookworm infection, for hookworm infection has been the means of stimulating rural health work as nothing else could have done. The Rockefeller Foundation has given to the South something which can never be repaid in organizing and stimulating our efforts for systematic control not only of hookworm disease, but other conditions as well.

The round worm (the ordinary stomach worm) is in some instances a tremendous public health factor. I have seen cases of round worm disease in which the results were as bad as those from hookworm disease. That should be considered in public health work.

When we knew only of thymol and santonin for treatment we were very much blessed. I came into health work when chenopodium was just beginning to be extensively used, and I felt very much gratified that I could give chenopodium instead of thymol. Chenopodium did not seem to create the after-effects that thymol did. I am glad that we have now a remedy for which we can claim even more, carbon tetrachlorid.

Dr. S. W. Welch, Montgomery, Ala.—Dr. Smillie has had a free hand in Alabama in the development of his work. He has made some experiments in the examination of soil around school houses. I had an idea that all the soils in the sandy lands of Alabama were infected with hookworm, but that is not true. He made ten or a dozen soil surveys about a school house and found hookworms in a radius of only about one hundred feet.

We are going to get another health officer in Covington County and get Dr. Smillie to organize a state work which will control the hookworm in a number of counties in the State. We hope in that way to rid Alabama within the next few years entirely of hookworm disease, and I see no good reason why we should not rid it of hookworm infection. The building of pit privies in the rural districts, however, is a slow process.

The pit privy is practically the only thing which is fool-proof, and if properly built is as sanitary as any other type of privy outside of sewer connections. It meets the conditions in the South, and until we can have a hundred per cent or ninety per cent of sewage disposal in the country we shall not get rid of either typhoid fever or hookworm. Malaria, hookworm disease and typhoid fever are very much more prevalent in the South than in other sections of the United States. That shows very clearly that the climatic conditions and the isolation of the people tend to keep down respiratory diseases, but these three diseases are easy to control.

Dr. James A. Hayne, Columbia, S. C.—About ten years ago at a conference on hookworm disease it was stated that there is a great deal of difference between hookworm infection, where people become diseased, and hookworm infestation. I used the illustration that a dog needs a certain number of fleas to keep its mind off the fact that it is a dog, and unless those fleas get to a very large size they do no harm. At one time we thought there was a certain toxin manufactured by the hookworm which caused harm, whether there was only one hookworm or two or more. One of the advantages of growing old is that you find people come around more and more to your opinions.

Dr. W. A. Brumfield, Blacksburg, Va.—I disagree with both speakers about drawing a fine line between hookworm infection and hookworm disease. Dr. Smillie spoke of the rough methods of determining them. Those methods can be used at ten feet as well as any other way. Any one who is familiar with hookworm disease can stand at ten feet and recognize a marked case. Infection with even a small number of intestinal parasites will do much to take away the vitality.

Dr. M. A. Fort, Atlanta, Ga.—In southwest Georgia I have been in the rural districts recently and certainly by the eye we can diagnose 75 per cent of those children to be seriously affected with hookworm. The doctors say that a few years ago, following the hookworm campaign, the children were much better, but they have gone back. If we removed hookworm infection as well as the disease that would not be the fact.

I heard a paper in New Orleans some time ago on the effects of hookworm infection on the students in a certain college. Twenty per cent of the men in the junior class were affected. They were separated from the rest, but nothing different in their appearance could be seen. They were given the treatment, however, and in a few

weeks there was a marked gain in weight. They were not sick before, but certainly something kept down their weight. If we can do no better, let us simply attempt to remove hookworm disease, but let us keep before us the ideal that we are not completing the work unless we also remove hookworm infection.

Dr. Roy K. Flannagan, Richmond, Va.—In 1921, the International Health Board, the successor of the Rockefeller Hookworm Commission, carried on under State Board of Health auspices resurvey hookworm work in four counties, namely: Dickenson, Wise, Lee and Richmond, with the discovery that there had been a reduction as follows:

	Year	Year
Wise	1913, 48.6% infection	1921, 24.8% infection
Richmond . . .	1911, 35.2% infection	1921, 2.3% infection
Dickenson . .	1913, 46.5% infection	1921, 20.8% infection
Lee	1913, 38.5% infection	1921, 16.4% infection

During this year (1923) another resurvey has been conducted, the counties being surveyed being Greensville, Southampton, Brunswick and Halifax. The results in the counties heard from are as follows:

	Year	Year
Greensville . .	1912, 66.5% infection	1923, 8.5% infection
Brunswick . . .	1912, 48.7% infection	1923, 4.6% infection
Southampton . .	1912, 43.3% infection	1923, 5.6% infection
Halifax	1911, 37.3% infection	1923, 2.0% infection

Dr. H. H. Howard, Jackson, Miss.—It has been my privilege for some years to supervise the work of the International Health Board in the West Indies. There we have seen fit to make a cure of the individual the object of our treatment for this disease and to attempt to cure as many of the people found infested as possible. It has not been unusual for us to cure as many as 90 per cent of the persons infested. These are tropical countries, where the habits of the people, the climatic conditions and perhaps the nature of the food all conspire to make hookworm infestation synonymous with hookworm disease, for mild infestations are rare. Are we not taking chances if we purposely leave hookworm infestations behind us by failing to treat to a cure? We would not be if we had perfect sanitary protection, but is it not possible for persons with a mild degree of infestation to transmit severe infestation to some one else?

From my experience there, I am afraid to stop short of a cure, if a cure is practicable, if for no other reason than this: when you once have the interest of the individual and have him concerned about his condition, why not continue to a cure, for you will probably not be able to arouse his interest a second time. I think, too, that few of us would have the hardihood to say that even twenty-five hookworms might not be a factor in any individual's health and in his fight against some other disease.

If we, in handling great numbers of often a primitive type of people in great areas in the West Indies, can secure cures, then certainly in the intensive work of a county health officer dealing with more intelligent classes of population it should be possible to do so.

SURGERY

RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL

INTRA-URETERAL MANIPULATIONS*†

By GEORGE R. LIVERMORE, M.D., F.A.C.S., Memphis, Tenn.

To save a person from operation by intra-ureteral manipulations through the cystoscope is an achievement that means much to the patient. Having had a ureteral calculus and having been relieved by cystoscopic methods, I can speak feelingly upon the subject. Many patients are subjected to operation which could have been avoided had ureteral manipulations been instituted, and I wish to impress upon you what may be done by this method.

To many surgeons the demonstration of a shadow in the line of the ureter means but one thing, and that is operation. To the urologist, however, the shadow first must be proven to be in the ureter; and second, to be too large or too firmly embedded to pass. A few years ago we were satisfied that the shadow was in the ureter if it was in line with the shadow cast by a shadowgraph catheter, but it has been shown that calcified lymph nodes; phleboliths and other concretions which are entirely extra-ureteral, may also cast a shadow in line with the catheter.

Kretschmer evolved the method of making two exposures on the same plate with a shift of the tube, and again we thought if the shadow was in line with both of the two shadows, it was undoubtedly a stone in the ureter. Bransford Lewis has shown and all of us have proven it to be true, that both shadows may often be in line with those of the ureter on a single plate and still not be in it. He devised the method of introducing a flexible metal instrument and then making two exposures on the same plate. If the shadows remain in line with each of those cast by the instrument, it is definitely proven to be in the ureter.

Having satisfied ourselves that there is a stone in the ureter, our next step is to determine if it can be made to pass into the bladder. As a general rule, it may be assumed that a stone that has passed beyond the pelvis of the kidney can be made to pass downward into the bladder. There are exceptions to all rules and of course very large stones or those embedded in the ureteral wall or covered by spicules cannot be made to pass. Still it is surprising what can be accomplished by patient and careful intra-ureteral manipulations.

No one can state that a calculus of moderate size will not pass until some effort has been made to assist it. How long can we persist in attempts at removal? Just so long as the patient shows no ill effects and there is no marked diminution in kidney function. A word of warning here in a case report may not be out of place.

The patient was a woman 60 years of age, who had a ureteral calculus three-eighths of an inch in diameter, about midway between the kidney and bladder. On account of the patient's age and her anxiety over an operation, I persisted in efforts at removal even after the kidney function was becoming impaired. When I finally insisted upon operation, I found a hydronephrotic area in the upper pole of the kidney that necessitated partial nephrectomy. This could have been avoided had I used my own judgment and operated at the first sign of diminishing kidney function.

Intra-ureteral manipulations to assist in the removal of a stone consist in the passage of a catheter, and, according to the method of Crowell, attempting to pass it beyond the stone. Failing in this, the injection of a 2 per cent solution of novocain will usually cause the ureter to relax and the catheter will glide by the stone. An attempt is then made to pass a second catheter up the ureter by the side of the one already in place. If this cannot be done, then the first one is removed and a larger catheter or bougie is introduced. It is also a good plan, after the instru-

*From Department of Urology, University of Tennessee.

†Read in Section on Urology, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

ment has passed beyond the calculus, to leave it in the ureter for 24 to 48 hours, for it not only acts as a dilator, but also drains the pelvis, thus preventing back pressure and subsequent damage to the kidney which might result from obstruction caused by the stone.

Instruments have been devised for intra-ureteral work by Lewis, Garceau, Buerger, Walther, Bugbee and others, and recently I have added one for the removal of stones in the ureter. It consists of a flexible shaft with a stone grasping portion that can be opened and closed and a filiform attachment that guides it up the ureter. I have been able to remove stones with it that have defied all my other instrumentation. It must be used most carefully and no attempt made to withdraw the stone. Simply try to loosen it or change its position very slightly. Fulguration is also a valuable means of assisting the passage of a stone and Bugbee's ureteral fulguration electrode is an instrument that renders valuable service, not only in the ureter, but also in the bladder and urethra as well.

Bransford Lewis' alligator forceps, with parallel jaws, are excellent for use in the lower end of the ureter, and the cystoscopic scissors of Buerger, all have a valuable place in this work. When a stone reaches the intravesicle portion of the ureter, it has great difficulty in wending its way into the bladder. It is in this type of case that fulguration, slitting the ureteral meatus with scissors or fulgurating and dilating it with Lewis' forceps, play such an important part in the final stage of the passage.

I have not seen the proportion of strictures of the ureter that Hunner reports. It is, however, as much of a pathological process as stricture of the urethra and is fortunately amenable to treatment. Dilation with flexible bougies, gradually increasing the size, is the method usually employed and has proven very successful in my hands. When the stricture is at the ureteral meatus, fulguration and slitting with cystoscopic scissors is followed immediately or at another slitting by dilation with bougies.

Intra-ureteral manipulations would be incomplete without mentioning ureterography. This is a very important diagnostic aid and is often overlooked because a pyelogram has been made. To make a successful ureterogram, it is important to withdraw the catheter nearly to the ureteral opening, slowly injecting the solution as the catheter is gradually withdrawn. The catheter should fit snugly in the ureter or better still (as some one has suggested) can be armed near its tip with a wax bulb which, pressed firmly against the ureteral meatus, prevents the escape of the pyelographic solution.

Sodium bromid is a very satisfactory material for use in this work, but Lowsley has proven that of all the preparations that cast a shadow, sodium iodid in 15 per cent solution is the least harmful and fulfills all other requirements as well.

The antiseptic pyelographic solution of Drs. Cunningham, Graves and Davis, one gram mercuric iodid in 3000 mils of a 12 per cent solution of sodium iodid is entirely satisfactory and eliminates the one remaining danger of pyelography, infection.

In closing let me impress upon you that intra-ureteral instrumentation is a very delicate procedure and should be done with the utmost care and gentleness, using only flexible instruments and manipulating them in such a manner that no injury will be done to the bladder or ureter.

Exchange Bldg.

DISCUSSION

Dr. John R. Caulk, St. Louis, Mo.—We as urologists do not have much trouble in differentiating ureteral and renal conditions from intra-abdominal lesions, if we do what we should. But if any of you heard the discussion this morning of ureteral stricture and appendicitis, you would see and be convinced that we ourselves are entirely without a conclusion as to the exact state of affairs in the ureter. The discussion, as you saw this morning, was entirely discordant and asymetrical in almost every feature. When the ureter is involved in stricture, kinks and twists, we have to be very careful in interpreting the exact fundamental location of the primary site of the trouble. Many of us overlook a condition at the ureteral meatus. Now, an obstruction at the vesical end of the ureter shows first as a dilatation outside the bladder wall because that is the first place it can dilate. My experience teaches me that strictures or obstructions at the lower ureter are more often intra-mural and often give no visible evidence by cystoscopic means or even by catheter. Furthermore, we may have ob-

structions due to congenital atresia or constrictions at the meatus and also to congenital valves. These obstructions are responsible for a large number of tortuous and twisted ureters that we see, and also for some of the kinks in the upper ureter. This latter is quite important and we have all probably been guilty of suspending kidneys for pain when associated with kinks, whereas the true cause was obstruction in the lower ureter.

Occlusion at the lower end of the ureter is promptly followed by an elongation and twisting of the canal, usually starting in the region near the kidney pelvis. For this reason a differential diagnosis between movability and lower obstruction requires great detail.

As to the cure of these ureteral obstructions, high dilatations will give relief to a great many individuals, but in the congenital intravesical obstructions I have found it much more satisfactory to slit the ureteral orifice by cautery scissors which I have recently had made. In this manner the improvement is much more rapid and later dilatations are much more effective.

Dr. H. W. E. Walther, New Orleans, La.—A great deal of intra-ureteral work must be done with the patient in an institution. Entirely too much ureteral manipulation has been done in offices. I cannot feel that I am alone in this, in getting those terrific reactions in patients walking into an office, disrobing, getting onto a table, submitting to this third degree and getting off the table again, dressing and walking to a taxi or trolley. That upset is sufficient to tie them into a knot either on the car or by the time they get home. The reaction usually reaches its crisis at about midnight and then you are called. I have been rather discouraged with being called out at midnight to administer a hypodermic, and so I have taken more of these cases lately to an institution where they are kept for 24 to 48 hours after the manipulation. I rest better at night and so does the patient.

Dr. Livermore brought out the point of the indwelling catheter in the ureter. A great many of us feel that all that can be done is to change the position of the stone or hope that the metal bougie will knock off a few needle points or spicules. Once these are broken off, the stone comes down. I have found that a very satisfactory procedure is to put a Garceau catheter in the ureter and leave it there a few days. I have had surprisingly little reaction from it. I am, to some degree, one of the converts of Dr. Hunner in believing that many obstructions in the ureter are due to stricture, the etiology of which may be obscure.

Where one is dealing with severe reactions, the retention must necessarily be less than when there is little or no infection present. I have been lavaging the kidneys with the indwelling catheter in place, and cannot feel that I have done them any harm. We should look for ureteral stricture more in the future by the method that Hunner and several others have described. Unless we look for them we are not going to find them. I have repeatedly emphasized the point that Dr. Hunner makes, that these obstructions or narrowings, call them what you will, cannot be diagnosed with a 5 or 6 (French) catheter, and even in the male you can sound up to at least an 11 (French). The 11 (French) bulbs will often make the diagnosis for us if we note the grasp of the bulb when an attempt is made to withdraw it.

I feel perfectly in accord with Dr. Caulk in most of these matters relative to pathology in the bladder and the ureter. They are there and we should look for them.

Dr. Nathan P. Sears, Syracuse, N. Y.—Dr. Livermore has called attention to the article which I published last year on calking the lower end of the ureter for a pyelogram. I feel that to obtain a ureterogram by the method of drawing the catheter down there must be such a change of pressure and such an opportunity for part of the fluid to leak past the catheter that any of the abnormal convolutions which may occur on the film may be artefacts, and in trying to think of a way to obtain equal pressure in the walls of the ureter I struck upon the plan of putting a wax bulb of 3½ millimeters in diameter back over the whistle tip of the catheter, fixing that into the cystoscope and passing it into the bladder, putting that into the intramural portion of the ureter. The patient has to be inclined 15 or 20 degrees or more off the table, or sodium bromid will run down into the kidney and leave the middle portion of the ureter empty. Lastly I inject fluid carefully. In this way we get a very satisfactory ureteral pyelogram. I have used the syringe so far and I was interested to hear some one speak yesterday of a little manometer attached to the syringe to keep the fluid at a certain pressure. This, I think, is an excellent idea. The caulk prevents the flooding around the catheter. The only difficulty is knowing the size of the ureter. Bard, of New York, is now making some bulbs woven into the catheter which I think will be an advantage. The urine may be collected through the catheter in this position just as if the catheter went into the kidney and a portion may be taken out for the microscopic and chemical examination. And then later, if necessary, the catheter can be passed up or a clean catheter put into the other channel and passed into the kidney. By this technic a complete examination of urine from both kidneys, function test and ureteropyelogram may be made at one sitting.

Dr. Francis R. Hagner, Washington, D. C.—I have never personally found it necessary to put two catheters into the ureter to diagnose calculus or to be sure it is in the ureter. When we have a man who understands x-ray work and is good at working with the stereoscope he can nearly always see whether the stone is in the same line with the catheter. If there is any question we use a wax-tipped catheter for more accurate diagnosis.

I must endorse forcibly what Dr. Walther said about doing ureteral manipulations in the office. We have not done them there for a great many years. We make all patients go to the hospital

and stay one night. As he says, they usually have pain when through and for some hours after. It is our experience that many have no pain if they are kept quietly in bed for 24 hours, and if pain does occur they are at once relieved by a hypodermic of morphia. In many of these cases we have to use manipulation two or three times and the patients are very much better satisfied and more willing to have manipulation again if they are handled in this way.

As to strictures of the ureter, we find them occasionally in men. I do have a good many women patients and also find strictures in these cases occasionally and after dilatation they recover from their symptoms. It depends upon the size of the instrument used whether you find stricture in the ureter very frequently or occasionally and it is my impression that when we have a stricture that is causing symptoms we find evidences of urinary retention above the stricture.

Dr. R. B. McIver, Jacksonville, Fla.—Up to three years ago, as soon as the diagnosis of stone in the ureter was made, preparations were made for an open operation. Following the interest that was aroused particularly by the report of the Crowell Clinic and other places, we took up manipulation, and in the last three years have not operated for any stone in the ureter except after systematic intra-ureteral manipulations. Stones of unusual size can be gotten through. Two weeks ago we removed a stone three-quarters of an inch long by half an inch broad after passing the stone with the catheter simply by an injection of oil into the passage of the ureter itself. After the catheter is once passed by the stone, if nothing else is done at the first sitting, the patient gets relief if there is a back pressure above the obstruction. The back pressure is due possibly to swelling of the ureteral wall around the stone, blocking off drainage.

A great majority of our patients are from the laboring classes that are not able to go to a hospital and take the extra expense of using the operating room and a day in the hospital, etc. We have them handled before they come down by some friend or take them in a wheeled chair to the door and home and to bed until the next day. We always give them a hypodermic when we do the work in the office. We believe our reactions have been less because we use a hypodermic in advance twenty minutes before working. We use 4 per cent novocain freely in the ureter. One other point in cases that have a great deal of pain from cystoscopic work of all kinds. Lately in some cases we have used with considerable benefit intracordal injections of 20 mils of 1 or 2 per cent novocain.

Dr. A. E. Goldstein, Baltimore, Md.—No matter how gentle we desire to be, there is a certain amount of pain produced at the time of examination in some cases. Where you can diagnose a stone and inform the patient that he has a stone, dilatation is necessary at first. The pain produced by dilatation is so severe frequently with patients after treatments that they would rather have an operation than have intra-ureteral manipulation. This has occurred to me many times in the past few years. Recently, by the application of sacral anesthesia in cystoscopy, this has been reduced somewhat. We believe that the pain produced by cystoscopy is more than that produced by intra-ureteral manipulation, and with sacral anesthesia the ureteral manipulation is withstood very much better than with no anesthetic at all.

Regarding the dilatation of strictures, we do not quite agree with Dr. Caulk, who claims you cannot dilate above number 11. I have dilated as high as 15 to 16, using retrograde catheterization. The introduction of the catheter for ureterograms with the catheter low down, I worked out three years ago on the normal ureter and found that the only satisfactory ureterogram obtained is by having the catheter low down.

Dr. L. C. Todd, Charlotte, N. C.—The pressure used is a very important factor in the production of reactions after pyelography. We found in examining pathologically the kidneys which had been removed for other conditions in which pyelography had been done, that there were certain traumatic injuries apparent in the kidneys. They consisted of rents in the pelvic mucosa and occasionally splits in the substance of the kidney. At that time we were using sodium bromid as a pyelographic medium, but in investigating the matter further we went back and examined all our pathological kidneys removed when thorium nitrate was in vogue, and found the same thing to be true. We thought at first that the hypertonic solution itself was to blame. Dr. Thompson and I started experimental work to see what effect pressure had in producing traumatic injuries to the kidney. In experimental animals we could produce exactly the same pathology by injecting physiological salt solution under increased pressure, or pressure that is higher than safe to use in the human patient, and we devised a little manometer attached to a syringe, which Dr. Sears mentioned. With this it is very easy to control the pressure at which the solutions are injected into the ureter through the catheter. We found that when a pyelogram was made at the pressure of 50 millimeters of mercury or less there was a very marked diminution in the severity of the reaction following. Furthermore, the functional output of the kidney was not impaired in the least. In the cases in which we had the opportunity to do a pyelogram under high pressure we found out that the functional output of the kidney was reduced to one-half or one-third of its previous function, and from the fact that we could get this effect with physiological salt solution as readily as we could with any of the well-known pyelographic media, we came to the conclusion that pressure was the chief factor in the production of this renal injury, and for that reason ever since we have been using routinely this manometer attached to the syringe.

Dr. John T. Geraghty, Baltimore, Md.—I have always been rather doubtful about the value of our ureteral manipulations as far as immediate

passage of the stone is concerned. We are dealing with a muscular tube and dilatations of this tube cannot produce any permanent enlargement of it. The moment you withdraw the dilating instrument the ureter instantly comes down to its normal size, so there is only one condition in which dilatations can be of any value or aid to the passage of the stone, and that is where you have infiltration of the ureteral wall or stricture of the ureter in front of the stone. Of course, in many cases we do not have that. Dr. Livermore mentioned the use of fulguration on the ureteral stone. Personally, I should think that that would be a more dangerous procedure to use outside of the bladder portion of the ureter. You have absolutely no control, do not know where your spark is going and can easily burn the ureteral wall and subject it to the formation of a stricture and greater trouble than was produced by the stone itself. It is a rather dangerous procedure because the amount of reduction of the stone which you could accomplish by a mild fulguration seems to be slight. Fulguration for stone in the lower end of the ureter is, of course, a very valuable procedure. There you burn away the mucous membrane of the mural portion of the ureter and open it up so that the stone can drop out. That procedure is carried out quite frequently. Nobody has sounded a warning about our manipulating a stone where there is only a single kidney. It has been a very serious thing for us to dilate too long and to try to make manipulations where the patient has only one kidney. We have had some very sad experiences in which the stone came down and blockaded and the patient developed a very acute infection. Where there is a single kidney and where it has a stone that is impacted, even though it is not causing complete blockade operative procedure, should be very seriously considered and no delay allowed.

We hear a great deal about kinks in the ureter which are due to one or two causes from a nephrectosis, dropping of the kidney or dilatation of the ureter. As Dr. Caulk says, the kink elongates itself and its presence is of no importance. You might just as well ask whether the digestive tract can be a straight line as the ureter. They are both muscular tubes and whether it lies straight or in folds is of little consequence. You can show experimentally that it makes very little difference. You may produce an acute angular kink in the ureter experimentally by sewing the two walls together and you get absolutely no obstruction and no change in the ureter above that point. That, of course, would not be true if you had a fibrous tube, but you have a muscular tube, and it is true. It readily accommodates itself to the position in which the ureter is placed.

Dr. A. J. Crowell, Charlotte, N. C.—I wish to emphasize what Dr. Geraghty just said. We must act and act immediately when we have an impacted stone in the ureter when there is only one kidney. We must persist in our efforts to get by the stone and give drainage to the kidney. If we fail we must operate at once because the patient has only one kidney and anuria is the result if we fail to get by the stone. In the great majority of cases we will succeed if we persist in our efforts. We have operated on ten or twelve cases of ureteral stone in approximately 180 cases coming to our Clinic. These were too large to be removed by cystoscopic manipulation. We have had to operate for ureteral stone twice within the last two weeks. When we succeed in getting the catheter by the stone, it should be fastened in and retained for 24 to 48 hours in order to dilate the ureter and drain the kidney. I have seen the patient go to sleep before being removed from the table after such drainage. This occurred only yesterday in a pregnant woman who was suffering with a hydropyonephrosis. Her temperature dropped in a few hours from 103° to normal.

Dr. W. Calhoun Stirling, Winston-Salem, N. C.—One of the most difficult conditions that we have to deal with is obstruction of the ureter due to pregnancy, not coincident to pregnancy but as a result of it. Recently we have had six or seven such cases of acute ureteral obstruction due to pregnancy. Roentgenograms were made in all of the cases and no harmful results were observed in any instance. In three of the patients the fetal bones were seen obstructing the ureter in the upper third with an acute kink in it. The temperature was as high as 105 degrees and an opiate was required to keep the patient quiet. On passing a ureteral catheter through the obstruction immediate relief of pain was obtained, but as soon as the drainage was stopped by removing the catheter the symptoms recurred and in two cases delivery was required to cure the obstruction, as it was not feasible to keep a catheter in the ureter until term. This condition is one of the most obstinate we have to deal with and requires constant attention. Continuous pelvic lavage has proven of great benefit in these cases. One woman who came in the hospital had had thirteen chills, one every day, profoundly septic, with a temperature of 106 degrees. After a catheter was passed to the kidney pelvis the temperature came down, her general condition improved rapidly and she made a rapid recovery following drainage and went on to normal term.

Some time ago I saw Dr. Hunner doing some of his work and returned home determined to be more on the alert for ureteral stricture, but like Dr. Hagner I am unable to confirm all Dr. Hunner has found in his experience. In a series of something over two hundred cases I have seen since that time I have seen very few cases of definite ureteral stricture. I have seen several where a hang to the catheter was obtained, but on subsequent catheterization and doing a pyelogram no evidence of dilatation and stasis of urine was found in the kidney. The findings at autopsy and on anatomic specimens fail to support his contention. I saw the report of a series of autopsies in the army in which pyelonephritis was found in 20 per cent of the cases and stricture was found in such a small number of cases that it was not mentioned. This evidence makes the statement that strictures cause so many kidney lesions untenable. If a large enough bulb is

passed into a normal ureter a hang will be elicited due to spasmodic contraction, normal anatomic constrictions, etc. In a case where a number 7 ureteral catheter will pass readily to the pelvis I cannot believe that enough obstruction exists to cause all the symptoms complained of by the average case.

Dr. A. I. Folsom, Dallas, Tex.—I want to call attention to the danger of the procedure. I am glad Dr. Geraghty called attention to the danger of one single kidney. Cases under my observation that vividly impressed me on the day following the effort to dislodge the stone had acute suppurative nephritis.

That situation can occur rather more frequently than we think. The question of a severe infection's spreading rapidly following these manipulations has to be taken into consideration. A severe reaction occurs after the manipulations and everybody is agreed that the patient should go into a hospital. It has been my experience, however, in the last two or three years that if you will allow the patient to lie down for a half day in your office afterward and flush his kidneys with water, the reactions following manipulations of the ureter are materially diminished. One reason why we have such vigorous reactions in cases of stones is that frequently there is an association of stricture and stone, and sometimes it is difficult to differentiate the primary pathology. I think sometimes stricture of the ureter can occur and we can have a stone above it as a secondary procedure. When we manipulate that ureter and take the catheter out we have a practically complete closure in the stricture and a very severe situation to deal with. Cases are very much more apt to have reaction if you let them get up and around than if you keep them quiet and keep a free flow of urine through the ureter. I have not had the experience of Dr. Caulk in not being able to dilate these ureters. By using a Bright cystoscope, which is a straight cystoscope, we are able to get practically as much dilatation as you get with the Kelly endoscopic tube. The Garceau catheter is an excellent means in these cases, and I think it should be left in place not more than 24 to 36 hours. As to the question of location of these strictures, I must say that my experience has been that mentioned by Dr. Caulk. The majority of them have been close to the bladder, not entirely intramural in the bladder wall, as I frequently have seen cases of atresia in the ureteral opening. There is a prevalent idea among doctors that the urethra that will tolerate a 24 French sound is not a strictured urethra, but we all know that is foolish. If you try these cases for a stricture of the ureter in the same careful manner in which you try the urethra, you will find many more than we find today.

Dr. H. A. Fowler, Washington, D. C.—Some years ago we felt a great deal of enthusiasm for the removal of ureteral stones by intra-ureteral manipulations with a catheter, and we thought we did succeed in removing a certain number in this way. I think we went so far as to write a paper on the value of some injections into the ureter for the purpose of relaxing the ureter and allowing the stone to drop down. That was long ago. I have forgotten what we injected. Our feeling in the last few years has been that if the stone will enter the ureter from the pelvis, passing the first narrow point in the ureter, in a very large percentage of cases it will successfully pass through the lower end of the ureter and into the bladder. So we have come to feel that intra-ureteral manipulation with a catheter and injection of olive oil and so on really has little to do with it. We pat ourselves on the back, thinking we have accomplished a great deal by our manipulation when, as a matter of fact, Nature has expelled the stone.

Given a case of stone in the ureter that has passed from the pelvis into the ureter, unless there be some pathology in the ureter which determines the retention of the stone, such as a stricture, the stone will pass if we give Nature half a chance. We fill the patient full of water to increase excretion and fully expect that if we visit and watch the patient for any possible damage to the kidney, the stone will pass. I had recently an experience of this kind, being called to see a patient who had had anuria three days. An x-ray had been made and a small stone was found in the lower ureter. I saw him in the evening and told the physician that if the stone did not pass and the ureter did not open up that we would look into it and see if we could change the position of the stone to possibly help its expulsion. We did not drag him to the hospital that night, did not get excited over it, but waited until the next day. The stone passed very nicely and the patient was relieved. Subsequent examination showed that the patient had only one kidney and that kidney was of very large size.

Of course, there are other factors which we must consider: the question of possible kidney damage, the question of infection, kidney damage and what not. Here is a chance for the exercise of as fine surgical judgment as a urologist is called upon to exercise.

Dr. Livermore (closing).—Dr. Caulk said he had not had satisfactory results with the scissors in cutting. My scissors were not very satisfactory until a traveling doctor came through Memphis who was also a mechanic and an expert on repairing instruments. He took my little scissors and made them so sharp that they work like a dream. If he comes through your city let him do it for you.

After cystoscopy all of us have had trouble and have given codein, morphin, benzol-benzoate, etc., without results. It is rather disagreeable to have the patients around the office, as many of them become nauseated and vomit all over the

place. It is a good idea to have them in a hospital. I have never found anything satisfactory to control the pain except morphin.

Dr. McCollum says there is no pain following the injection of air into the ureter in making a ureterogram or pyelogram, but this has not been the experience of others. I have been afraid of air embolism, for they taught us in the old days that it was a bad thing to get air in a vein. Since intravenous medication has become so popular, I am sure this danger was exaggerated. I know a man who injected 20 mils of air into a dying horse's veins, repeating the dose about six times. After the sixth dose the horse fell down, but was soon on its feet again. He lived three days after this and there was no evidence that he died of air embolism.

Dr. Sears and Dr. Hagner spoke of scratches on the catheter as diagnostic of stone, and stated that we could make a diagnosis by means of stereoscopic plates. Sometimes we can, sometimes we cannot. This is merely another method of verifying our findings. A flexible metal instrument is passed up the ureter and after taking a picture we shift the tube and make a second exposure. If the shadow is in line with both catheters, then you know it is in the ureter.

Dr. Hunner deserves our gratitude and thanks for the pioneer work he has done. Ureteral stricture is just as much of a pathological condition as stricture of the urethra. I have seen them and know they occur frequently, but I have not seen the percentage of cases that Dr. Hunner has. It may be that I have not the diagnostic acumen to find them, but we are looking for them every day and hope we are not overlooking many.

Every man who starts with something new will be criticised. Dr. Bransford Lewis, of St. Louis, first aroused my interest in intra-ureteral manipulation for stone. Dr. Folsom, who refers to its dangers, is a kill-joy. In answer to him, I stated in my paper that it was very delicate work and required the greatest care and skill.

Dr. Geraghty states that he is afraid the fulguration wire would burn through the ureter. You know you get a certain amount of edema in front of the stone and all you wish to do with your fulguration wire is to puncture the edematous area. The merest touch will do it. Dr. Fowler says smooth stones will pass, anyway. Of course many of them do, and so do babies, but you have to help them along with forceps sometimes. A stone that is covered with spicules or embedded in the mucous membrane is not going to pass unless you do something to loosen it, and by putting a catheter in the ureter and working the catheter beyond the stone you may loosen it, or you can pass my instrument up and grasp the stone and change its position slightly and it will come down after it has been there for months.

THE DIAGNOSIS AND TREATMENT OF CERTAIN CONDITIONS OF THE VESICAL NECK*

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In discussing the vesical neck or deep urethra and verumontanum, we shall take the opportunity to review some of our past errors of omission and commission, and direct attention to certain points which we think represent progress.

We believe that there have been more errors of omission in failing to recognize the disturbances which arise from abnormal conditions of the verumontanum than in the failure to recognize any other pathologic lesions of the genito-urinary tract.

This is due largely to the fact that urinary findings, such as pus, blood, casts, albumin, urinary obstructions, residual urine, etc., are negative in the type of lesions of the verumontanum which usually require endoscopic treatment.

The symptoms are often misleading. They may be urinary, such as undue frequency or pain at the end of urination; or sexual, such as premature emissions and impotency, partial or complete; or the symptoms may be nervousness, more or less ill defined; they may be directed to the muscles of the back or thighs; or there may be a deep-seated itching sensation or a feeling of discomfort at the neck of the bladder, etc.

Varying combinations of the above symptoms may be present in the hyperesthetic or hypertrophied verumontanum, and unless we are thinking of such conditions we are quite likely to overlook them or tell the patient that his symptoms are

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of no consequence and may of themselves disappear.

Prolonged ungratified sexual desire, such as is incident to frequent "petting parties," is usually in the history of such patients, and this or similar things, or conduct in a way related to such sexual affairs, plays an important etiologic role in the production of pathologic lesions of the verumontanum.

Formerly our method of treating the verumontanum with applications of silver nitrate was sufficiently crude to make many of the patients prefer their complaints to the treatment. It also kept us from feeling any enthusiasm about the application of remedies to the verumontanum through the conventional endoscope. Our failure to recognize the significance of these more or less trivial symptoms, and the more or less bungling and painful treatment, resulted in inability to obtain satisfactory results in many patients in the past who have since been cured and now have a sense of sexual and genital well-being which is gratifying both to them and to us.

If we were asked what part of our work in the past fifteen years had been most neglected and most inadequately treated, we should say the management of patients with abnormal conditions of the verumontanum. Yet we do not think our work differed very much from that we have seen done by the average urologist. We are now of the opinion that a larger percentage of patients with vague or ill defined genital or urinary symptoms, non-inflammatory and non-obstructive in character, will be cured by appropriate applications to the verumontanum than from any or all other methods.

In this paper we wish to direct attention mainly to four things:

(1) An endoscope with rounded edges which is used without an obturator;

(2) The employment of adrenalin chlorid in the anesthesia to shrink up the verumontanum and to render the application of silver nitrate and acid nitrate of mercury less painful;

(3) The employment of applications of silver nitrate to the verumontanum in the treatment of obscure bacteriuria where no abnormality can be found in the bladder, prostate, seminal vesicals, ureters or kidneys; and

(4) X-ray pictures of the bladder distended with air to outline the prostate gland and projecting vesical snouts.

We shall omit discussing many of the more or less well known conditions of the deep urethra in order to give more time to the above mentioned subject.

ENDOSCOPE

A few years ago we modified the Swinburne endoscope by having it made with rounded edges so that it could be used without an obturator. We also had a small channel made in the lower part of its lumen so that urine which might come into the deep urethra could be drawn out by suction, thereby lessening the mopping with applicators to get rid of it. Later we found that by having the edges rounded, so that we could look as the endoscope was advanced into the deep urethra, the verumontanum could readily be seen, and that very rarely did the urine come into the endoscope. The single modification of rounding the sharp edges was the only thing necessary and the additional expense of providing the channel for drawing out the urine was not required. With this instrument, which we show you, the time and pain required for treatment are both definitely lessened.

URETHRAL ANESTHESIA AND ADRENALIN TO THE VERUMONTANUM

For years nose and throat specialists have employed adrenalin chlorid and cocain to shrink the turbinates so that a better view may be obtained and the application of the desired remedies facilitated.

The vascular character of the hyperemic verumontanum renders it a suitable place to employ adrenalin for the same purpose and its highly sensitive nerve terminals make it desirable to lessen its size so that it will not be less pressed upon by instrumentation.

In view of these and other advantages which come from the use of adrenalin for this purpose, it seems somewhat strange that it has, heretofore, received little if any attention. Sometime ago when we began its use we looked over the litera-

ture, but were unable to find any reference to its employment on the verumontanum.

By adding 12 minims of adrenalin chlorid solution, 1/1000, to the solution of local anesthesia which is injected through an instillator, the pain of endoscopic treatments as well as the discomfort of cystoscopic examinations is undoubtedly lessened. Of course, it should only be used in case the diagnosis has already been made for the obvious reason that the hypertrophy, abnormal hyperemia, etc., would not be recognized.

During the past five years we have gradually become converted to the use of local anesthesia in the urethral tract, after having many years thought that the best anesthetic in the urethra was adequate lubrication and a gentle hand. We now use it in all applications to the deep urethra and for cystoscopic examinations, and add to it the adrenalin chlorid solution.

We have not seen any untoward effects from alypin and novocain in several thousand injections into the urethra, nor from the combination with adrenalin for the deep urethra in about 350 instillations during the past eight months. We employ a 1 per cent solution of the anesthetic and we use it cautiously in those patients who have gross lesions of the urethra and those who have been subjected to rough instrumentation. Undoubtedly the patients who have the sharpness of the discomfort relieved by anesthesia will report for subsequent treatments they may need with more promptness and regularity than they do when they dread instrumentation.

The plan we follow is to inject a 1 per cent solution of novocain, alypin, etc., into the anterior urethra, which is then gently pressed so as to carry some of it into the deep urethra. The meatus is clamped with an ordinary slide holder which has rubber tubing over it to prevent discomfort from its grip.

In a few minutes we use a Bremermann instillator to carry the adrenalin and novocain or alypin solution into the deep urethra. A few minutes are again allowed to elapse and the instrumentation is begun. By using the endoscope with rounded edges and without the obturator, so that we may look as the instrument passes into the deep urethra and with the adrenalin anesthesia, it is exceedingly easy to see the verumontanum as it comes into the open end of the endoscope and apply nitrate of silver, which we usually employ in a saturated solution.

The bleeding, which not infrequently occurs in the congested and hypersensitive verumontanum, is definitely decreased. Very little, if any, mopping with applicators is required and the pain and time required are proportionately decreased.

We hope the question of urethral anesthesia in general will not be brought into discussion, for the reason that we all have such divergent opinions about it and the points we make are not dependent upon local urethral anesthesia.

BACTERIURIA

The difficulty nearly always experienced in the treatment of bacteriuria where no definite lesion can be found in the genito-urinary tract is probably familiar to us all. Eight of such patients have been cured by applying the concentrated solution of silver nitrate to the verumontanum through the endoscope as above described. The exact manner in which such a procedure effects a cure we are unable to explain, but as to its value in cases which come in this class, we have been thoroughly convinced. It may be that there is a focus of infection in the sinus pocularis which is in this manner destroyed, though such foci are not obvious as are the foci associated with pyogenic infections of the sinus pocularis. Seven out of eight of the patients cured have been treated by us with the usual measures unsuccessfully, and some of them at periods for several years. The improvement was noticeable frequently after the first treatment and the urine was usually clear after from three to five treatments. Two weeks are allowed to elapse between treatments.

The Demonstration of Medium Lobe Enlargement of the Prostate Gland and Prostatic Snouts which Project Into the Bladder by X-Ray After Distending the Bladder with Air.—Recently we have employed air injections into the bladder pre-

ceding the x-ray pictures to outline prostatic enlargements and projecting snouts with such success that we wish to direct attention to this procedure and demonstrate a few plates. The plan is quite simple and easy to carry out. The patient takes the usual dose of oil, enema, omits breakfast, etc. A catheter is passed and a rubber band is placed around the penis to prevent the escape of air, which sometimes, though not always, will pass out along the catheter. The patient is turned face downward. A rubber tube is connected to the catheter and air is injected into the bladder until slight discomfort is produced. The x-ray is then taken slightly upward to show the prostatic projection in the axis of the pelvic bones. In this manner a good outline of the vesical portion of the prostate is secured. A study of these plates gives a surprisingly clear idea as to the neck of the bladder and prostatic snouts.

We do not, of course, think that such a plan is necessary in all cases, but rather where it seems inadvisable to do a cystoscopic examination and those in whom we feel that additional information is desired.

DISCUSSION

Dr. H. A. Fowler, Washington, D. C.—Dr. Ballenger uses a modified Swinburne endoscope. We have had more satisfactory examinations with Young's endoscope, which permits a full view of the urethra. This we use as follows: a local anesthetic, 2 per cent novocain or salicain, instilled into the anterior urethra and milked back into the posterior urethra. This gives us sufficient anesthesia. The instrument is then passed to the bladder and the urine withdrawn. The table is elevated and the instrument slowly withdrawn until the vesical sphincter is seen to contract down over the end of the instrument. In this way we can examine the sphincter region and the entire circumference of the urethra as the endoscope is gradually withdrawn, and a minute examination of the whole posterior urethra may easily be made. Occasionally it is necessary to reintroduce the instrument which can be readily done by introducing the obturator and advancing it to any desired level of the urethra without producing bleeding or injury. Topical applications may be made through the endoscope in those cases where indicated. We have found 10 per cent silver nitrate solution best suited for the majority of cases. This we use as a general application to the whole posterior urethra, or with a small applicator we can limit its application to the verumontanum itself. We do not find so many lesions confined to the verumontanum, yet we can recognize and treat them when present. Occasionally we find polypoid growths of the verumontanum, more frequently inflammatory changes of the mucosa, particularly a granular condition of the floor and lateral walls with inflammatory changes about the utricle. To these conditions we ascribe many of the symptoms in these cases.

We have failed to explain why it is that a certain number of these patients with an old history of chronic infection of the prostate and vesicles have marked nervous and neurasthenic symptoms persisting after the infection has been cleared up. When they come under observation the nervous and psychic symptoms are out of all proportion to the lesions found at the time of examination. Practically every case of prostatitis suffers more or less from sexual disturbances, varying from premature ejaculation on the one hand to impotency at the other end of the series. For instance, there is the familiar group where the patient's every thought is centered on his posterior urethra. What the underlying pathology is I have failed to explain. Various treatments have been applied with an equal degree of failure.

It has been our experience that bacteriuria often persists after the urine has become quite free from pus and shreds. We have seen these patients clear up for a few days or weeks and then the condition recurs as bad as ever. Where the condition persists we have determined frequently that the kidneys are uninfected. It has seemed to us that the infection is due to a lesion in the posterior urethra and I am not surprised that Dr. Ballenger has observed the urine clear up after the application of 10 per cent silver nitrate to the verumontanum. It is probable that in these cases the silver nitrate solution was applied to the focus of infection causing the bacteriuria. We have seen the same thing occur after the application of flavine to the posterior urethra.

We have had no experience with the use of adrenalin as a local anesthetic. There occurs to me a theoretical objection: when one does an endoscopy one wishes to see the condition of the urethral mucosa without the distorsion produced by the shrinking effect of adrenalin. Carried out under a local anesthetic, we do not find much difficulty with our endoscopic work. If the patient bleeds on the introduction of the endoscope we infer that there is something wrong in the posterior urethra. There should be no bleeding if care is taken in the introduction of the instrument. One will find that on repeated instrumentation the amount of bleeding diminishes, confirming our belief that bleeding is due to a pathological condition of the posterior urethra rather than rough handling.

Dr. George R. Livermore, Memphis, Tenn.—This type of case comes to us with very obscure symptoms, from pains in the legs to headache, backache and pain in the testicles; some with frequency, some without, and it has been my experience, as Dr. Fowler has shown, that the

symptoms often do not coincide with the findings in the prostatic urethra. I have seen all changes in the verumontanum from the bifurcated to the globular cherry-like mass, and those irregular, punched-out places in the floor and lateral wall of the urethra that we come in contact with so often. I think that one reason that Dr. Fowler has not seen more of them is that the endoscope of Young opens on the end so that the urethra more or less collapses and does not give as wide a field as with the instrument opening on the side which holds the urethra open.

I have never used adrenalin. Probably there is one objection in adding adrenalin to novocain: that the toxicity is increased.

With regard to touching the verumontanum with silver nitrate, many of us have seen cases where, after doing endoscopic work, the urine cleared up. Some years ago I modified the type of follicular needle I was using, and have found it very useful. It can be obtained from Kny-Scheerer & Co. By using this needle and injecting the sinus pocularis, we can clear up those infections better than by merely touching the verumontanum with a solution. In regard to the urine or anesthetic's obscuring the field, that is a very objectionable feature, and we have tried after injecting novocain to eliminate it by passing a catheter before introducing the urethroscope. We draw it down gradually until we evacuate the last drop that is present. This means there is not so much sponging afterwards. I have never used the saturated solution of silver nitrate, but have used 10 and 20 per cent with good results. In most of these cases there is not only a verumontanum involvement, but also an infection of the prostate and vesicles. Therefore, we should not confine our attention to the verumontanum, but should treat the prostate and seminal vesicles as well.

I have not used air injections of the bladder, but in the x-ray plates, as Dr. Ballenger has shown, there is a definite shadow indicating an enlargement of the prostate.

Dr. M. L. Boyd, Atlanta, Ga.—Dr. Ballenger has already given to urologists some interesting and useful urological instruments. I am sure that this endoscope which he presents will prove useful to urologists who are in the habit of making applications to the posterior urethra. It seems to me a much simpler way to apply medicines to the posterior urethra than the straight open-end endoscope which Dr. Fowler suggests. The question of making applications to the posterior urethra is of interest to me because for the last few years I have been of the opinion that these cases are cured by the ordinary methods employed to cure prostatitis and the other chronic inflammatory conditions which surround the posterior urethra. Dr. Ballenger refers particularly to patients with the essential lesion in the posterior urethra. Doubtless they do exist, although in my cases there is usually some cause for them in the organs about the posterior urethra which empty into it. My attention was called to seminal vesiculitis and vasitis some years ago by a case of prostatectomy where the patient continued to have posterior urethritis, chills, fever and cystitis, with increased frequency of urination, which I could never relieve until I discovered that he had a seminal vesiculitis. As soon as I emptied the vesicles and irrigated the posterior urethra his symptoms were dissipated. The study which I made of vesiculitis, etc., led me to an interesting discovery, namely, that in acute non-tuberculous epididymitis I was able to stop the advance of the process by gently emptying the seminal vesicle on that side. Rectal examinations show vesicles always to be distended and full of pus. These patients, as you know, complain of discomfort in the lower abdomen, in and around the inguinal canal. Not infrequently they will get up after the vesicle is emptied and volunteer the statement that they feel better.

I have practically discarded endoscope treatments of the posterior urethra and rely on massage of the prostate, seminal vesicles and vasa, with irrigations of the bladder and urethra and dilatations with sounds and the Kollmann dilator. I precede these treatments with cysto-urethroscopic examinations of the posterior urethra with the Brown-Buerger cysto-urethroscope, and before I discharge them I always make another similar examination. In some of these cases of posterior urethritis I have made bacteriological examinations of the seminal vesicular and prostatic secretion. I irrigate the urethra with a catheter lying as far back as the external sphincter, using a large quantity of irrigating fluid, and then push the catheter into the bladder and withdraw a specimen of urine for culture. The prostate and seminal vesicles are then massaged and the secretion withdrawn by passing the catheter as I did for the urine culture. I found the majority of these cases free from infection, but in some cases, where the organisms were unexpected, I was able to demonstrate the gonococcus. I mention this because it seems to me that in many cases endoscopic treatment is not only unsatisfactory, but is contraindicated.

I realize that I am very much alone in my stand about applications to the posterior urethra, because from what I can learn most urologists are employing them. I hope the discussion will bring out some points concerning the matter.

Dr. Ballenger (closing). — The endoscope which I have shown you is one chiefly for treatment and not for diagnosis. It lessens the pain caused by treatment after the diagnosis is made. We all have our pet endoscope for various purposes. We prefer the McCarthy cysto-urethroscope for the diagnosis. Dr. Fowler said he has been impressed with the fact that the symptoms in neurasthenic patients do not tally with the magnitude of the lesion. In this he is correct, but the symptoms tally almost directly with the degree of their sexual weakness. Many of the symptoms come from a demand they feel for the need of treatment for impotency rather than to rid them of inflammatory lesions. The applications which we mention are almost never used

in the treatment of inflammatory conditions. The patients who come in this group are usually those free from pus in the urine.

We have had to jump around on more or less non-related subjects. They all have to do, however, with the deep urethra and for that reason we grouped them in this manner.

ANKYLOSIS OF THE ELBOW: ITS PREVENTION AND TREATMENT*†

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It is not the purpose of this paper to discuss ankylosis of the elbow which results from infection, but rather those cases in which as a result of trauma there is a change in the axis of one or more of the articular surfaces, or in which a free fragment is displaced which acts as a wedge between the articular surfaces.

Traumatic ankylosis of the elbow is not an uncommon sequela of fractures about the elbow. There are certain type groups that will regularly result in partial or complete ankylosis unless definite effort is made from the onset to avoid disability.

Group 1.—*Fractures in children with displacement of an epiphysis.*

Group 2.—*Supracondyloid fractures, either comminuted or simple in which a vicious union or bony ankylosis has resulted.*

Group 3.—*Fractures with displacement of a free fragment, which acts like a foreign body wedged between the articular surfaces. In this group will be considered fractures of the coronoid process, the internal condyle in adults and children and fractures of the head of the radius.*

Group 4.—*Fractures of the ulna, particularly the upper third of the shaft.*

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†Read in Section on Bone and Joint Surgery, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

Each group will be considered from two standpoints: prevention of disability and the treatment when ankylosis, partial or complete, has developed.

GROUP 1

Cases of fracture of the humerus with displacement of the capitellum will regularly produce a limitation of motion of the elbow unless a perfect restitution of the normal anatomic relationship is accomplished. This group of cases cannot be considered without reverting briefly to the appearance of the normal elbow from a radiographic standpoint.

In previous contributions I have described certain lines which, for the sake of clarity, must be mentioned here. The following may be stated as almost axiomatic:

(1) The capitellum bears a definite relationship to the lower end of the humerus. In the young child (6-10) the capitellum is anterior to the midplane of the shaft of the humerus.

(2) The capitellum normally occupies the sigmoid cavity. In the young (from 6-10) there is a definite space radiographically between the capitellum and the sigmoid cavity.

(3) Any overlapping of the shadow of the sigmoid cavity by the shadow of the capitellum is evidence of a displacement.

(4) The absence of the capitellum shadow below the shaft of the humerus is evidence of complete displacement, and such a displacement if not overcome will result in permanent limitation of motion and deformity.

In the past, inattention to some of the above mentioned facts has resulted in ankylosis and deformity.

FRACTURE OF HUMERUS WITH DISPLACEMENT OF THE CAPITELLUM

B. McK. April 6 fell from a swing one hour before coming under observation. He had pain in his elbow, loss of function and could not flex the elbow.

The arm was extended, the forearm supinated, and there was circumscribed swelling over the inner aspect of the elbow. No effort was made to manipulate the elbow until an anesthetic was administered. An x-ray, lateral view, elbow flexed, showed that the capitellum was completely absent from the space between the lower end of the shaft and the sigmoid cavity. The anterior posterior view showed the capitellum displaced to one side.

Dr. A. M. Cain gave him gas-oxygen anesthesia.

Examination showed marked abnormal mobility of the joint. Lateral dislocation could have been easily accomplished, which suggested a tear of the internal lateral ligament. The lower epiphysis of the humerous could be felt as a loose body in the joint.

After hyperflexion the normal contour and relationship of the bony prominences seemed to be restored. The pulse could be easily palpated through the dressing.

PROGRESS NOTES.—April 17, the patient had not had pain. There was no swelling of the hand or fingers.

April 23, the dressing was changed. There was less swelling about the elbow and we were able to lower the forearm to a right angle without causing pain. Contrast baths and passive motion of the fingers, wrist and shoulder were prescribed. A plaster splint was applied.

The mother was advised to have the child rotate the shoulder outward, as well as to abduct the shoulder to avoid possible internal rotation of the shoulder and cubitus varus.

April 26, he was referred to Dr. Dean Lewis, in Chicago, for further treatment.

COMMENT. — (1) It was recognized that the capitellum was not in its proper place, and therefore it must be displaced.

(2) Immediate reduction under anesthesia restored the capitellum to its proper place.

(3) Contrast the result obtained with cases in which the displacement is not primarily recognized.

Such a contrast is evident in the case of Master M., age 10, who came under observation three months after an injury to his left elbow. The doctor had assured the mother that the limitation of motion was only a temporary disability.

At our first examination we found a marked limitation of motion at the elbow (there was only 15 degrees motion), a cubitus varus deformity and atrophy of the muscles of the arm and forearm. A hard bony mass could be felt on the outer anterior aspect of the elbow. This mass was slightly movable. A diagnosis of vicious union of an old supracondyloid fracture, causing ankylosis, was made.

The radiograph (29395) showed complete absence of the capitellum from its normal position, below the expanded end of the shaft of the humerus. The sigmoid cavity apparently was empty. There was a shadow anterior to the shaft, and above the expanded end of the shaft, and this shadow was the displaced capitellum. In this position it was acting as a foreign body wedge interfering with mobility of the joint.

Our duty in this and similar cases is clear. Operative interference is the only possible means by which mobility of the joint can be obtained and the carrying angle restored.

Operation consisted of removal of the foreign body from the left elbow.

Pre-operative diagnosis was vicious union of the left supracondyloid fracture and ankylosis of the left elbow.

Post-operative diagnosis was vicious union of the left supracondyloid fracture and ankylosis of the left elbow.

An incision was made about four inches long beginning at the outer side of the left arm at the junction of the middle and lower third extending downward about one inch below the head of the radius. Th triceps was outlined and retracted backward. The supinator longus, which overlay the fragment, was dissected away from the external condyle and subperiosteally the fragment was removed from the lower end of the humerus. The orbicular ligament with the head of the radius was necessarily opened. When the entire loose fragment was removed, we were able completely to flex and extend the elbow.

One suture was put in the capsule to close up the capsular ligament, and the tourniquet was loosened. There were no vessels to ligate. The skin was approximated with silk worm gut. Before putting the dressing on, we completely extended the arm and found that the carrying angle was normal. We were able completely to flex the elbow. There being no bleeding, the dressing was applied and the elbow hyperflexed.

On examination of the child one year and a half later (May 3, 1923), we found a perfectly functioning elbow. Flexion and extension were not limited, and the carrying angle was normal. Pronation and supination were not limited. Both elbows measured 18.5 centimeters.

X-ray pictures taken at this time (May, 1923) are shown to illustrate the result.

OBSERVATIONS

In this group we are confronted by several problems.

(1) When seen immediately after the accident it is imperative that the displaced epiphysis be restored to its normal bed at once. A proper knowledge of the normal position is essential for the accomplishment of the above.

Failure to reduce the deformity means limitation of motion and alteration of the carrying angle. It is not the ideal thing to remove an epiphysis, but when function of the joint is at stake it is justifiable. Results after three and one-half years prove that only good has been accomplished.

The method of approach to the elbow which I have used for the past three and a half years differs from many of the methods in common use and I believe possesses certain advantages. It has been described in a previous communication, but I would like to present it here for your consideration.

Following principles laid down by Dr. James E. Thompson, of Galveston, that long bones should be approached in such a manner that the least possible damage be done to muscles, nerves and blood vessels, the method of approach has been external lateral incision. The upper limit of the incision should be below the deltoid insertion. The lower limit may in some instances extend well below the head of the radius. The radial nerve

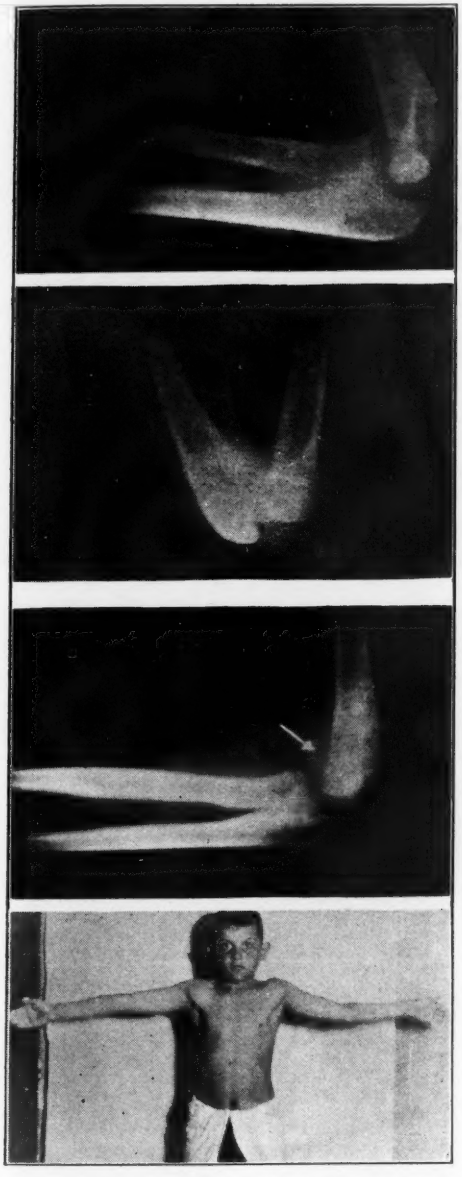


Fig. 1 (top)—Supracondyloid fracture of humerus. Complete displacement of lower epiphysis of humerus. Case B. McK.

Fig. 2 (under Fig. 1)—Supracondyloid fracture of humerus. Complete displacement of lower epiphysis of humerus. After reduction. Case B. McK.

Fig. 3 (under Fig. 2)—Fracture of humerus with displacement of capitulum. Master M.

Fig. 4 (bottom)—Master M. End result.

should be exposed above the penetration of the supinator longus muscle. With the nerve in full view it can be retracted forward and inward. If necessary the fibers of the supinator are split.

The triceps is retracted outward and backward. With a periosteotome the overlying muscles with the periosteum can then be lifted from the bone.

After exposing the lower end of the humerus the external lateral ligament is cut and further procedure is entirely dependent upon the nature of the case. This will be seen by referring to operative records in particular cases.

The external lateral incision is valuable because it permits exposure of the joint surface with the least possible damage to anatomic structures.

The most important advantage is that it permits immediate postoperative mobilization of the joint.

MacAusland's posterior U-shaped flap with section of the olecranon gives the greatest amount of exposure, but it certainly does not permit immediate mobilization.

Immediate postoperative mobilization is of the greatest value. (Compare cases of Mike C. with Brown and McCarthy.) In the group to be considered next the two methods will be contrasted.

GROUP 2

The second group of cases is those in which there has been a supracondyloid fracture, where angular deformity has resulted.

The change in the axis of the lower fragment alters the relationship of the epiphyses of the humerus to the sigmoid cavity. This group can be discussed after citation of cases.

Frank C., September 17, while playing, fell backward, about three or four feet. He was unable to move his arm, except with great pain, and was rushed to the hospital.

The left forearm and arm were swollen. The forearm in the position of pronation. The elbow was in the position of 110 degrees. No attempt was made to manipulate the arm until the anesthetic was administered, on account of the great pain. On manipulation, the head of the radius rotated with the shaft. The right elbow was 22, and the left elbow 25 centimeters. On extension of the elbow no abnormal mobility was felt. The forearm and lower end of the humerus swung out anyway on manipula-

tion. Crepitus was present. Anesthesia. Deformity reduced and a hyperflexion dressing applied.

September 16, 1921, the hyperflexed position was changed to one of right angle. There was a great deal of ecchymosis on the inner aspect of the left arm and some swelling of the elbow. Anterior and posterior plaster splints were applied in complete supination.

September 19, 1921, the dressing was removed, massage was given, and some passive motion. He was able to flex the arm to an angle of about 45 degrees. The anatomic landmarks were in normal relationship to each other. Contrast bath was given and anterior and posterior plaster splint at right angles were applied.

September 23, 1921, he had vibratory massage, contrast baths, and the splint changed to an angle of about 110 degrees.

October 8, 1921, he was able to extend the arm to 150 degrees, and flex it 90 degrees. He complained a great deal and resisted any effort to do anything for him. The carrying angle was normal. He was given active and passive motion, vibratory massage, contrast bath, and a splint was applied.

October 18, 1921, the dressing was removed. He was able to extend the arm to 160 degrees easily. The carrying angle was normal. He had pronation and supination. He would not allow the arm to be moved and resisted every effort that was being made for him. He had flexion of 90 degrees, massage and contrast baths, and the dressing was allowed to remain off. The mother was advised to have the patient use sand bags and dumb-bells.

November 22, 1921, he had flexion to 90 degrees. A large amount of callus was felt over the external condyle. The arm was held in adduction and internal rotation.

November 30, 1921, there was marked improvement in muscle power over the last examination. He had extension to 150 degrees, flexion beyond the right angle, and a good deal of callus. The carrying angle was all right. He was advised to continue the use of massage,, also to use dumb-bells, and to return at the end of two weeks when the necessary manipulation under anesthesia would be resorted to.

COMMENT.—A glance at the picture taken before reduction shows the marked angular deformity and the change in relationship of the capitellum to the axis of the shaft of the humerus. It is easy to visualize how much limitation of motion would result if the existing deformity were not reduced. Flexion of the elbow would be limited by the coronoid process, striking the shaft of the humerus above the coronoid fossa.

Such experiences are illustrated by the cases of Myrtle S. and Eugene B. One of the cases has been reported in detail before.

Myrtle S. about five weeks before I saw her fell on her outstretched hand. Her local physician told the parents that there was so much swelling that he could do nothing for her. August 28, 1920, I examined her and found marked cubitus virus with internal rotation of the arm. There was limitation of flexion and extension of the elbow.

The Diagnosis.—Vicious union, supracondyloid fracture of the humerus.

Operation.—Under ether anesthesia (Dr. Rives anesthetist), an external lateral incision was made, beginning about the middle third of the arm, and extending down to about the level of the head of the radius. The brachialis anticus muscle was retracted inward, the radial nerve was exposed and retracted inward, as well as the supinator longus muscle. The periosteum was incised and retracted. The brachialis anticus was retracted from the humerus, and an anterior cuneiform osteotomy was performed. The divided ends of the humerus were drilled, and a kangaroo tendon suture was introduced, merely for temporary fixation. When the elbow was extended, I noticed that the carrying angle had been restored, and complete flexion of the elbow was possible. A few interrupted sutures were introduced and the arm placed in hyperflexion. The wound healed by primary intention.

Subsequent Course.—The patient left the hospital, September 7, 1920, at which time she could extend the elbow well beyond the right angle.

At the time the last note was made on this case, October 30, 1920, the patient could completely extend the elbow. She carried the arm in position of internal rotation and pronation of the forearm. If the forearm was supinated and held in this position the carrying angle was restored, showing that there was a relaxation of the external lateral ligament, and that the internal rotators were more active than the external rotators. Roetgenograms showed the same points as the preceding pictures: overlapping of the capitellum by the olecranon shadow and backward displacement of the capitellum.

The case showed such a marked deformity that an effort was made to overcome it by operation. Before undertaking the operation the case was studied in the light of our normal pictures.

It is easy to understand the limitation of extension, as we note the obliquity backward of the distal end of the hume-

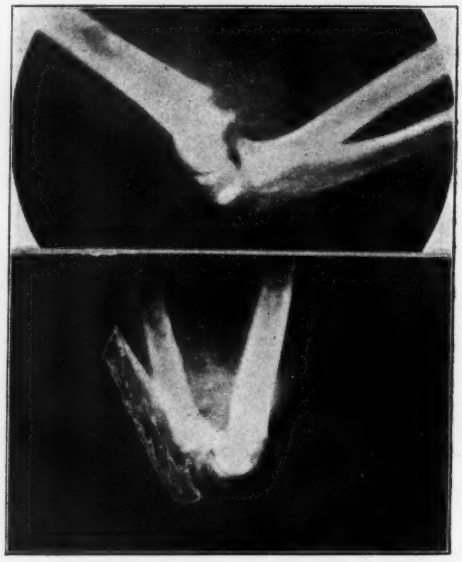


Fig. 5 (top)—Supracondyloid fracture of humerus. Before reduction. Frank C.

Fig. 6 (bottom)—Supracondyloid fracture of humerus. After reduction. Frank C.

rus in this and other cases with similar deformities. The olecranon meets an obstruction before the extension is accomplished, and it no longer can reach the olecranon fossa, but is stopped by the lower end of the humerus. Flexion is impossible because the coronoid probably strikes against the lower end of the humerus before it can reach the coronoid fossa. The problem to be solved, therefore, is a reconstruction of the normal axis of the lower fragment, which means that it must be displaced forward. It seems logical, therefore, that if a cuneiform section of the humerus is removed anteriorly this will then allow the lower fragment to be flexed or molded into position. This brings the capitellum forward, and it will allow the olecranon to reach the olecranon foss.

Eugene B., seven years old, sustained a supracondyloid fracture of the humerus by falling from the porch, July 28, 1922. He came under observation in the clinic July 29, 1922, at which time he had a right angle plaster splint which extended down to the wrist. The hand was held in palmar flexion.

Examination.—There was a large amount of swelling of the hand and fingers. A bleb was noticed on the anterior aspect of the arm. When the patient was anesthetized crepitus was felt over the condyle of the lower end of the humerus beneath the skin. He had loss of the carrying angle.

Treatment.—Under ether anesthesia reduction was attempted with an effort to maintain the arm in hyperflexion. This failed because the radial was obliterated by swelling of the soft parts about the elbow. A molded plaster splint was applied with the arm at 85 degrees. The patient was seen every second day from July 2 to August 10. Swelling persisted during this period. On August 10, he was anesthetized, and it was possible to maintain hperflexion with the arm in supination. X-ray report after this manipulation showed a backward displacement of the lower fragment. The usual after-care, contrast bath, massage, and passive motion was given on alternate days. He was referred to Miss Sue Price, for resistive exercises, in the early part of September. At this time he was able to extend the arm to 120 degrees and flex to about 130, but there was still evidence of a diminished carrying angle. On October 26, he was admitted to the hospital for operation, because all efforts to reduce the deformity had failed.

Examination at this time revealed the fact that motion in the right elbow was limited to an arc of about 30 degrees. Passive motion gave a greater arc of motion. Operation was performed October 30, 1922.

Operation.—The pre-operative diagnosis was supracondyloid fracture with partial ankylosis and vicious union. The usual external lateral incision was employed and the humerus approached in the usual way. The capsule of the joint was opened and it was seen that the lower epiphysis of the humerus was displaced obliquely, thus interfering with the mobility of the joint. It was necessary to remove the displaced fragment. The muscle planes were approximated, the capsule was sutured, the elbow hyperflexed, and the specimen preserved. The wound healed by primary intention.

Post-operative care consisted of frequent changes of splints, resistive exercises, contrast baths and massage. This has continued to the present time.

The condition today, August 18, 1923, is: The patient is able to flex the elbow to about 60 degrees and extend to 150 voluntarily. The carrying angle is unimpaired. By passive motion we are able to flex the elbow to 45 degrees. There is evidence at the present time of small exostosis on the anterior aspect of the lower end of the shaft of the humerus. It may be necessary to remove this bone outgrowth in order to obtain full flexion.

COMMENT.—(1) In this group partial ankylosis is preventable by immediate reduction.

(2) There must be a complete restoration of the axial plane of the shaft and epiphysis, otherwise a limitation of motion will result.

(3) Where such a deformity has been allowed to go unreduced and partial ankylosis has resulted, operative interference is indicated.

(4) The method of approach should be an external lateral incision and free exposure of the radial nerve to avoid damage.

(5) An anterior cuneiform osteotomy (apex posterior and base forward) above the broad expansion of the lower end of the diaphysis gives the desired change in the axis of the epiphysis and a restoration of all normal lines.

(6) The case can then be treated as a simple fracture. It is not necessary to wire or plate these cases; a hyperflexion dressing is all that is required.

(7) In cases such as Eugene B., where the lower epiphysis has to be removed, the joint need not be entirely closed. A certain amount of extra synovial fluid is thrown out following exposure of the joint. If the joint is primarily closed, distention of the capsule will cause pain. An open capsule with mobilization avoids pain and gives a greater sense of security to the operator if he is a believer in the Willems plan of treatment for the treatment of joint infections. I believe that drainage is a safety valve against infection. The synovial fluid is antiseptic in its action, and any possible contamination which may be by chance introduced at operation is taken care of by synovial outflow.

This is a matter which is open for dis-

cussion. Personal observation with mobilization without closure of the capsule has given excellent results. No case has developed infection because of the small opening left in the capsule.

Bony ankylosis of the elbow of long standing need not deter one from attempting to obtain a movable joint. The following cases are cited to prove this statement:

Fig. 7 (top)—Ankylosis of elbow, duration five years. Arthroplasty. Mike C.

Fig. 8 (middle)—Mike C. Diagnosis: ankylosis of elbow, five years' standing. Before operation.

Fig. 9 (bottom)—Mike C. Diagnosis: ankylosis of elbow. Treatment: arthroplasty. Result shows by illustration.

Mike C. had ankylosis of the elbow. In the winter of 1915 he was badly bruised during football practice. For about six months he was able to move the elbow freely but experienced some pain. In July, 1916, while working in a copper work he had a sudden attack of pain in elbow, and about five days later noticed some swelling. At this time the slightest movement or touch caused intense pain. The doctor visiting thought the condition was rheumatism. The patient was taken to Bellevieu Hospital where an x-ray was made. No bony change was found so the condition was supposed to be an infection. Operation was performed but no pus was discovered. The arm was put in a cast for several weeks on the grounds that it was a tuberculous condition. On removal of the arm from the cast the joint was stiff and so remained.

Operation.—An external incision was made beginning two inches above the elbow and extending down along the postero and lateral aspect of the radius. The supinator longus was retracted forward and the extensor carpi radialis was retracted posteriorly. The external condyle was then exposed. The external lateral ligament was cut, thus exposing the external condyle and the head of the radius. The periosteum was incised, and the periosteotome used to elevate periosteum. The external condyle was resected. The olecranon fossa was enlarged. The tip of the olecranon was removed, and a portion of the head of the radius resected. No muscle attachments were cut. A portion of the fascia covering the triceps was turned into the joint, leaving the base attached. The muscle planes were sutured. Skin suture was silk worm. There was no joint drainage, and immediate mobilization.

The wound healed by primary intention. The patient was placed under the care of Miss Price.

He left the hospital May 22, 1920, with a range of motion from 45 to 130 degrees.

When last heard from, he stated that his arm was improving. This was in September, 1922.

The case of Mr. Brown was diagnosed as compound comminuted supracondyloid fracture of the humerus, with complete severance of the triceps muscle.

Complaint.—The patient fell 25 feet from a scaffold. The fall was broken by a board which he struck with the left side, fracturing the left humerus (supracondyloid).

Operation.—On December 18, 1920, debridement of the scalp wound over the parietal bone was done. It was sutured with interrupted silk worm sutures and dichloramin T. was put in the wound. Debridement of the wound over the olecranon was done with suture of the triceps tendon. The wound was closed with interrupted silk worm sutures. Manipulation was immobilization in hyperflexion, and 1500 units of antitetanic serum were given.

The pre-operative diagnosis was compound comminuted supracondyloid fracture of the left humerus.

A wound about two inches long on the olecranon was enlarged and debrided. The triceps tendon was sutured with chromic gut. Manipulation consisting of flexion and extension was done until the condyles of the humerus appeared to be in position. Dichloramin T. was injected throughout the wound and the skin closed with interrupted silk worm gut. At no time were the fingers introduced into the wound. The elbow was immobilized in hyperflexion with the hand supinated. A rubber tube supported the hand. In the right lumbar region 1500 units of antitoxin were injected.

December 19, 1920, the patient had been fairly comfortable since admission. X-ray pictures showed external and internal condyles approximated in good relative position, but there was an overriding and forward displacement of the fragments.

December 30, 1920, he complained only a little. The patient was up and in the court part of the time.

December 31, 1920, the cast was removed from the arm by Dr. Cohn. There was a slight sinus on the elbow. The wound was dressed, dichloramin T. pack and silk worm drain were used, and the old cast was reapplied.

January 20, 1921, the wound was dressed daily by Dr. Cohn. There was a slight discharge, but it was healing nicely.

January 21, 1921, the cast was removed and Jones splint applied. The patient was fairly comfortable most of the day. The arm was massaged daily.

January 26, 1921, Balkan frame and Thomas splint were used. The arm was exercised.

January 28, 1921, under gas anesthesia, the elbow was manipulated from 160 to 80 degrees. There was fairly firm union and no alteration of the carrying angle.

February 12, 1921, the old splint was removed and the wound dressed by Dr. Cohn. Shoulder, elbow and wrist were manipulated, active and passive motion of all joints was attempted. There was limitation in the shoulder motion due to some contracture of muscles about the shoulder girdle, from disuse. Motion in the elbow was limited to 150 to 90 degrees. Voluntary motion was not as much as that. The wound was granulating, with no longer evidence of infection. A plaster splint was applied to the mesial aspect of the arm and forearm to give an exaggerated carrying angle.

December 13, 1921.—Treatment has been kept up at Dr. Cohn's office, and by Miss Price since leaving the hospital, in which time considerable improvement has been obtained. At present he is able to bend the elbow from a right angle to about 135 degrees. He is unable to flex more than a right angle. Pronation and supination are normal, and the musculature of the two arms about equal in firmness.

The grip in the left hand was less than in the right. Force on flexion was much less in the left forearm. Circumference below elbow in the right arm was 27, above the elbow 27, and in the left 27. Both wrists were 17 centimeters. Force on extension was equal in both forearms.

On December 13, 1921, arthroplasty of the left elbow was done.

The incision began about two inches below the elbow over the inner side and was carried up about three inches above the elbow and completed as a U-shaped incision down the outer side of the arm and forearm. The dislodged flap was dissected away from the overlaying fascia and over the tip of the triceps tendon. These fibers were evidently the ones which were severed originally. At the position where the adhesions were cut, there was a small amount of seropurulent discharge. The ulna nerve was then exposed by linear incision in the inner side of the triceps muscle and it was dissected away from the surrounding tissue. Then a transverse incision was made over the region of the olecranon. This incision was carried down through the triceps tendon and through the periosteum and covered the olecranon. The triceps was then retracted sufficiently to enable us to make a transverse section of the olecranon. It was easily seen that the new growth of bone had filled up the olecranon fossa and the posterior aspect of the humerus and this was the cause of the limitation of motion in the joint. After the tip of the olecranon was removed, the olecranon fossa was reamed with a Hudson barr. We were unable, however, to obtain flexion of the elbow, because the internal condyle and trochlear process, as a result of vicious union, interfered with flexion of the forearm, because the coronoid impigned on this portion. This was then removed with Hudson rongeurs.

Incision was made on the outer side of the left thigh and about six inches of fascia lata three inches wide was removed. This was then transplanted into the elbow joint, and sutured over the lower end of the humerus, beginning the suture line in the anterior aspect of the capsule. It was also sutured to the under surface of the triceps muscle. The severed triceps muscle was sutured with kangaroo tendon, mattress sutures. After this, we replaced the ulnar nerve in its bed. The tourniquet was removed. No large blood vessels had been injured. The skin wound was sutured with silk worm gut and Michel clips and a palmar and dorsal plaster splint applied.

Progress Record.—On December 15 there was no pain, but some swelling of the fingers. The bandage was cut and reapplied.

December 16, the dressing was changed. Some blood accumulation could be palpated. Several clips were removed, and a picric acid dressing was applied.

December 19, the dressing was changed and a large amount of retained bloody ooze was expressed from the wound. Many clips were removed. There was no evident infection. Pronation and supination were voluntary. The wound was dressed by Dr. Field. The silk worm gut sutures were removed.

December 21, the wound was dressed. There was a bloody discharge. A silk worm drain was introduced to favor drainage. The clips were all removed.

December 31, a small clot was expressed from the upper angle wound. The splint was changed and the elbow flexed to 50 degrees. He was to go home.

The treatment in this case consisted in suturing the severed muscle after debriding the lacerated rough edges of the soft parts. The importance of this can-

Fig. 10 (top)—Mrs. S. Dislocation of elbow and fracture of internal condyle. Before reduction.
Fig. 11 (bottom)—Mrs. S. End result.

not be stressed sufficiently because without sutures the patient would certainly have had loss of extension of the forearm. The skin edges were approximated, thus closing the joint cavity. The case was then treated as a simple fracture, and reduction was attempted by manipulation from without. Probably it would have been tempting to some to have done an open operation. Harm only would have resulted from any manipulation within this joint. Infection and ankylosis most certainly would have followed. Primary suture was done as noted before. If infection had developed, temperature would have indicated it and the wound could easily have been opened. The position made at this time was one of hyperflexion. This resulted in some reduction of the deformity, but such that one could not consider it favorable for a good result.

A picture taken at that time showed an oblique overriding on the anterior portion of the shaft by the lower fragment. It was then decided to see if the displacement could not be further overcome by a right angle plaster splint. A picture taken following this manipulation showed a much better position, but still was not as satisfactory as it might have been. It has been possible to flex the elbow 60 degrees and extend it to 130 degrees. It was decided to see whether the present slight displacement could not be overcome by the use of the Jones elbow extension splint. This was applied January 14. The patient has been encouraged to move the elbow.

Fig. 12 (top)—Mrs. J. Fracture of head of radius. Fragments acted as a foreign body. Operative removal. Perfect functional.

Fig. 13 (bottom)—Mrs. J. End result.

REMARKS.—The introduction of foreign material such as wire, nails and the like would have resulted in more harm than good in this case. The frequent change of position and mobilization of the elbow allowed the synovial fluid to be discharged through a small sinus. With this mobilization we avoided an ankylosis, which might have resulted from immobilization sufficiently long to obtain a perfect union.

In simple cases of supracondyloid fracture it is possible to utilize the anatomic axioms so well known to every one, reduction, placing the forearm in hyperflexion on the arm, forearm in the position of complete supination. The dressing is one that requires close attention to detail, otherwise harm may result to the patient. The hand, forearm and arm should be bandaged from the finger tips to the axillary fold. In this way undue constriction at the wrist is avoided. Volkman's ischemia results from an improperly applied bandage in these cases. This unfortunate complication, when once seen, is not to be forgotten.

Massage and resistive exercise have been given by Miss Sue Price.

On February 27, 1922, the carrying angle was normal. He could flex the elbow to 90 degrees and extend it almost completely.

It is not for us to despair should an ankylosis develop in some elbow cases. Arthroplasty can in some cases recover from the scrap heap a useless elbow.

Case.—Edward McC., 27 years old; was admitted on December 13, 1921, to the services of Drs. Matas, Cohn, Field and Carter.

Tentative Diagnosis.—Old supracondyloid fracture with ankylosis (left), and fracture of the internal condyle of the left arm.

Complaint.—When about 12 years of age, while running one day, he fell and threw out his arm to catch himself. The force of the fall was delivered on the left elbow (arm flexed) and a fracture resulted just above the elbow. He was treated by his local physician for about two months. The arm was put up in a metal case in almost completely extended position. When it was taken out of the cast it was

absolutely stiff in the elbow joint. Pronation and supination of the arm were normal, and the wrist movements of the fingers were normal. This condition existed until the present injury. About two weeks before I saw him he slipped and fell on the curbing, striking the left arm about the elbow. He was unable to say whether the forearm fell across or behind. When he got up there was pain in the elbow, no movement in the elbow joint, a kind of swelling sensation in the elbow and no change of sensation in the hand and fingers. The next day he had a very much swollen and bruised arm. He went to Charity Hospital, and two days afterwards was diagnosed as having a fracture. X-ray pictures were taken; he was bandaged, told that was all that was necessary. He came to Touro, where he was seen in the clinic by Dr. Cohn, who put him up in plaster splint and had an x-ray picture made (Plate No. 30371).

Radiographic examination of the left elbow showed an old fracture about the elbow, with complete bony ankylosis of the joint. There was apparently a fresh fracture on the outer surface running through the lower portion of the humerus. There was no evidence of callus formation, and no ankylosis of the radius to the lower end of the humerus.

The left elbow showed complete ankyolsis, except limitation to one half of supination and pronation. Movements of the shoulder were normal and movements of the fingers and wrist normal.

Measurements of the right arm at the axilla	29.5 cm.
Above elbow	22.5 cm.
Below elbow	23 cm.
At wrist	16.5 cm.
Left arm at axilla	24 cm.
Above elbow	24.5 cm.
Below elbow	23 cm.
At wrist	16 cm.

Operation.—Arthoplasty of the left elbow.

A horseshoe-shaped incision was made on the dorsum of the forearm, the base of the incision being about two inches above the olecranon process. This flap was dissected away from the muscles of the arm and forearm, and protected with a saline towel. Then a liniar incision was made on the inner aspect of the arm just above the internal condyle, the ulna nerve was dissected free for about an inch and a half and then retracted. A transverse incision was made over the olecranon process and down through the periosteum, thus severing the triceps tendon. The olecranon was cut across with an ordinary saw, after which we were able completely to flex the elbow. At this stage we noted that the olecranon fossa was filled with tissue formation which was removed, and with a Hudson rongeur the loose fragments of the internal condyle which had recently been fractured, which were acting as a foreign body and prevention motion, were also removed. The lower articular surface of the humerus was then remodelled, after which a large piece of fascia lata from the left thigh was removed and introduced and sutured over the lower articular surface of the humerus. The ulna nerve was covered over with the layer of fascia to protect it from the surrounding tissue. The triceps was then sutured to the sheath of the ulna with kangaroo sutures and the tourniquet was removed. There was a large gush of venous blood, but no vessels had to be ligated. The skin flap was then sutured back in place with silk worm gut sutures. The arm was put in extension with a plaster splint.

December 16, he had no nausea or vomiting and did not require morphine. There was no swelling of the fingers and no disturbance in sensation.

December 18, the hand was swollen. The bandage was cut, and the posterior splint removed.

December 19, the wound was dressed and several Michel clips removed. Bloody accumulation was expressed from the wound.

December 21, the wound was dressed, and all sutures and clips were removed. The flap near the tip was discolored. A bloody discharge was expressed from the wound. A silk worm drain was introduced.

December 22, the wound on the leg was dressed, and the sutures were removed. A dressing was applied.

December 23, the wound was dressed, a clot expressed from the upper angle, and all sutures and clips removed. The angle was changed to 150 degrees.

When last seen the muscles were developing. There was about 50 degrees motion.

GROUP 3

This group comprises fractures with displacement of a free fragment, which acts like a foreign body wedged between the articular surfaces. Fractures of the coronoid process, the internal condyle in adults and children and fractures of the head of the radius will be considered.

The free fragment should be removed when it is impossible to replace it and maintain it in position. As a rule, removal does not cause impairment of function. In some cases perfect results have been obtained by removal.

Case.—Cyril P. was diagnosed as having a fracture of the internal epicondyle.

History.—He had a fall six days previously while playing football. He said he fell with his arm outstretched. He was treated in the Emergency Clinic by Dr. Field, December 30, 1921. An x-ray picture was taken, and the arm was put up extreme flexion.

January 5, 1922, the patient was to return for a general anesthetic on Saturday. The splint was not removed. There was no pain. The arm was manipulated under an anesthetic. It was noticed that the internal condyle was loose in the joint. He was unable completely to reduce the deformity. The elbow was placed in hyperflexion.

X-ray 30897.—Radiographic examination of the left elbow following reduction showed a marked lateral displacement of the internal condyle. Operation was advised.

At the operation, January 17, 1922, an incision about four inches long was made on the inner aspect of the arm and forearm. The middle of the incision was over the tip of the internal condyle. The skin was dissected back on either side about one-half inch. The muscles were contused, and it was evident that there had been intramuscular as well as subcutaneous hemorrhage. An effort was made to isolate the ulnar nerve without injuring it. After doing this it was noted that the lower portion of the triceps was very prominent. Through a rent anterior to the triceps we could see the loose fragment. The muscles originating from the internal condyle region were retracted forward and the muscular attachments dissected away from the internal condyle as well as the capsule, and the fragments were removed. The small vessels were ligated and the capsule sutured. The muscle plane was approximated with chromic gut, and the skin closed with silk worm and Michel clips, in hyperflexion position.

Progress Notes.—January 21, 1922, the temperature was 99. The dressing was not changed.

January 24, the wound healed. Extension was limited to about 95 degrees, and flexion to 45 degrees. The splint was applied with the forearm in flexion, and extension about 45 degrees.

On February 4 there was slight swelling about the elbow. Extension was 110 degrees. Contrast baths were given and the splint reapplied.

On February 7 contrast baths were given and the splint reapplied. Extension was 160 degrees.

February 9, there was slight discoloration over the anterior lower one-fifth of the forearm. Contrast baths were given and the splint was not reapplied. He was referred to Miss Price.

On May 7, 1923, he called at my office by request. He had complete extension, no limitation or pronation and supination.

In the case of Mrs. Spies, whose history follows, it was possible to maintain reduction of the free fragment. A perfect result followed conservative treatment.

Case.—Mrs. Vivian S. was 34 years old.

The tentative diagnosis was fracture of the internal condyle of the humerus, with dislocation of the elbow (backward and lateral).

Examination June 16—The elbow was flexed to an angle of about 120, with the forearm pronated. There was cubitus varus, and depression or dimpling of skin where the external condyle is normally.

There was an increase in the antero-posterior diameter of the elbow. The olecranon was seen posterior to its normal bed. There was a depression on either side of the olecranon. The external condyle could not be palpated in the normal superficial position. Under the anesthetic abnormal lateral mobility and crepitus over the internal condyle was noticed. The backward and lateral dislocation was easily reduced. Hyperflexion position was used. An x-ray picture was made to determine if the internal condyle was replaced.

Progress Record.—June 22, 1923, the hyperflexion dressing was removed. The arm was given a contrast bath, and the thermolite was used. The elbow was moved through an arc of 60 degrees from 30 to right angles without pain. The light molded anterior and posterior splints were applied to the arm and forearm, the forearm being in the position of pronation. This dressing was allowed to remain until June 26, at which time a bath was given, dry heat, and passive motion of 30 degrees to 140, with no pain. Pronation and supination were not painful. The right angle splint was reapplied.

June 29, the treatment was similar to that on June 26.

July 3, similar treatment was given. A plaster splint was applied, and the elbow was maintained at about 140 degrees.

The dressing was removed, and there was less swelling of the forearm and arm than at the previous dressing. The patient was given dry heat application, then passive motion to about 35 degrees flexion, and 140 degrees extension. She complained of some pain when the elbow was extended to 140 degrees. After giving a bath, a plaster splint was applied, the forearm pronated, and the elbow about 140 degrees.

July 9, flexion and extension were complete. Supination and pronation were not painful. After applying dry heat, passive motion was given. All dressings were removed, and the patient was advised to give arm hot and cold baths daily.

July 16, there was no deformity. Extension was limited to about 150 degrees, and flexion to about 40 degrees. Pronation and supination were not painful. The patient was told to continue active exercise, carrying of weights and the use of dumb-bells, sand bags and weights.

August 3, extenson was 160 degrees, flexion perfect. Resistive exercise indicated increase in muscle power.

Case Mrs. J.—The diagnosis in the case of Mrs. J. was fracture of the head of the radius with partial ankylosis.

History.—About six weeks before she came under observation, she had a fall on her left elbow. The physician who first examined her told her that the elbow was dislocated and that all of the joints were loose, but nothing need be done for this. When she was first seen by Dr. Cohn, there was swelling of the left elbow, limitation of flexion, and extension of pain over the head of the radius. Crepitus was elicited when the thumb was placed over the head of the radius and forearm supinated and pronated.

X-ray picture revealed small fragments of the portion of the radius, acting as interlocking fragments preventing flexion and extension of the elbow.

Operation.—External lateral incision was made, the supinator muscle was retracted forward, the external lateral ligament and capsule covering head of the radius was incised freely, exposing the head. The muscles were retracted, a pair of forceps were introduced into the joint and a free fragment removed. A search was made for other free fragments, but, apparently, there was none.

The capsule was sutured. Several bleeding points were ligated. A few hemostatic sutures were put in. The wound was not entirely closed, leaving room for drainage for any synovial fluid which might come. The forearm was put in hyperflexion for 24 hours, after which the arm was put at right angles. The patient was instructed to move the elbow. She left the hospital September 25. There was no discoloration of the hand and no pain when the elbow was manipulated.

She was instructed after leaving the hospital to manipulate the elbow. This she did, and on October 5 she was able to extend the arm to 150 degrees and flex well to about 45 degrees. She had no pain. There was still a little limitation of pronation and supination. I believe that she had improved within the last few days.

October 7, 1922, she was able to flex the arm completely and to extend to about 160 degrees. Pronation and supination were not limited. She was discharged.

March 8, 1923, there was no limitation of motion, flexion and extension, pronation and supination. The result was perfect.

GROUP 4

This includes fractures of the ulna, particularly the upper third of the shaft.

(1) Reduction of the deformity in fractures of the upper third of the ulna is essential. If this is not accomplished the ulna acts as a pendulum, swinging as a rule away from the midline, stretching the internal lateral ligament and thus diminishing the carrying angle. More than this happens. Flexion of the upper fragments, which results from contraction of the brachialis anticus, added to the change in the axis of the upper portion of the shaft, alters the relationship of the sigmoid cavity of the olecranon and the articular portion of the humerus. The result of this, if not corrected, is a limitation of flexion of the elbow.

(2) When the deformity is reduced no limitation of motion results.

(3) If it is not possible to maintain reduction, open operation is advisable.

Case.—In Leon M. our diagnosis was fracture of the ulna, and fracture of the head of the radius.

He fell off a wagon Dec. 31 on his hand and came to Touro immediately, where he was seen by Dr. Pitkin. After taking the x-ray picture Dr. Pitkin requested that Dr. Cohn see the patient. The x-ray revealed a fracture of the ulna overlapping about two inches, upper fragment displaced to the radial side. Under ether anesthesia we were able to obtain reduction with difficulty. The forearm was placed in complete supination.

January 12, 1921, there was no deformity of the forearm. Limitation at the elbow of flexion was due possibly to a dislocation of the fractured head of the radius. Contrast baths and massage were given.

January 26, the splint was removed altogether. Contrast baths and resistive exercises were given, with resistive pronation and supination. He was advised to use hot and cold water and exercise. Particular attention was to be paid movements of the elbow.

January 28, flexion of the elbow was limited to 75 degrees. Extension was not limited. Supination was limited.

January 31, he was able to flex the elbow to right angle, and had complete extension. There was an increase in muscle power as well as pronation and supination.

February 5, muscle power, resistive flexion and extension showed improvement. Flexion was still limited. He was advised to chin the bar, saw wood, and have contrast baths.

February 16, he had complete supination, and pronation limited to about 50 per cent of normal. He had complete extension, and flexion limited to about 70 degrees, probably mechanical and due to the slight forward displacement of the head of the radius. Muscle development improved. He was told to continue contrast baths, active and passive motion.

February 22, the mother did not come because she said she was perfectly satisfied with the results.

The muscles were very active. The flexor muscles were improving. He was able, with resistive exercise, to flex the elbow against resistance of right angle. Supination was more active than pronation in resistive exercise. Advised to continue sawing wood, and other exercises, and also to continue contrast baths.

March 19, he had complete extension. When the forearm was completely extended there was a prominence just below the bend of the elbow.

The elbow, flexed to a right angle, seemed to be changed to an obtuse diameter of the elbow. The patient was able to flex the elbow to about 60 degrees. Pronation and supination were unimpaired. In palpation along the head of the radius, the olecranon seemed closer to the internal condyle than to the external condyle. Mrs. Mauer said that she thought it was getting along all right, and that she saw nothing wrong.

May 24, 1921, the carrying angle was normal. The forearm extended on the arm showed slight prominence on the elbow. When the forearm was flexed to a right angle some slight angulation of the elbow about two inches from the olecranon appeared.

Pronation and supination were not impaired. Flexion was limited to about 60 degrees—rather a hyperextension than extension. The patient did everything that he wished—chopped wood, played baseball, and tied his neck tie. He was advised to continue all exercise.

July 19, he had complete extension, and the same amount of flexion, due to forward displacement of the head of the radius. The mother was satisfied with the result in spite of advice to have the mechanical causes of limitation removed.

Case.—Florence B.'s case was diagnosed fracture of the ulna.

March 22, 1921, in the afternoon, she fell on the forearm in a way that she could not explain. She was seen by me that day, at about 6:30. She was brought to Touro by her father and mother, after which she was seen by Dr. Cohn. Examination at that time showed the forearm in complete pronation. The olecranon seemed rather prominent. Any attempt to move the elbow caused pain. Even to touch the arm caused pain. There was an apparent increase in the anterior posterior diameter of the elbow. There was localized pain over the ulna about two inches below the tip of the olecranon, and cubitus varus deformity. Diagnosis of fracture of the ulna was made. The x-ray picture showed a transverse fracture of the ulna about two inches below the tip of the olecranon. There was an impacted fracture of the head of the radius also.

Under ether anesthesia, the forearm was manipulated and the overriding overcome by traction. The lower fragments were brought into position by hyperflexion of the arm. The impaction of the head of the radius was broken up.

Two short small plaster splints were put on the forearm and molded plaster splints on the dorsal aspect of the forearm.

The child slept well the entire night. She had no swelling of the fingers and no pain.

X-ray picture taken subsequently to reduction showed perfect reduction of the fracture of the ulna and head of the radius.

April 4, 1921, the dressing was removed, contrast baths and massage were given. The position of the elbow was changed to one of right angle without pain to the patient. She was able to pronate, and the head of the radius rotated with the shaft. The carrying angle seemed normal. Light massage and the position of hyperflexion were maintained until April 7.

April 7, 1921, the dressing was removed. There was no deformity. The patient was able completely to flex the elbow and extend it beyond the right angle. Anatomic landmarks at the elbow were in their normal relationship. The head of the radius rotated with the shaft. Pronation and supination caused no pain along the shaft of the ulna. Contrast baths and massage were given.

April 11, 1921, the patient was able to flex the arm perfectly and extend it completely without pain. The head of radius rotated with the shaft. Pronation and supination were slightly limited (active), supination was not limited, and the carrying angle was normal. There was no swelling about the elbow. Contrast baths, passive motion and vibratory massage were given.

April 25, 1921, she had a perfect carrying angle, no deformity, flexion to 45 degrees, perfect extension, and perfect supination and pronation.

May 4, 1921, there was no limitation of flexion and extension. The carrying angle was normal. Pronation and supination were not limited. Rotation at the shoulder was not limited. Vibratory massage, contrast baths were advised, and she was advised not to try to lift heavy weights for a little while.

DISCUSSION

Dr. W. R. MacAusland, Boston, Mass.—The frequency of these injuries, together with the published results of well known surgeons, varying as they do in perfect results from 20 to 80 per cent, show that as yet these lesions are not on the whole very skillfully handled. The study

of injuries to the elbow joint, especially in children, is complicated in the large majority of cases by the difficulty of radiographic interpretation, especially before the centers of ossification have made their appearance.

Failure to obtain functional results in the main have been due to:

(1) Lack of study of the history and method of injury.

(2) Time elapsed before reduction is accomplished.

(3) Lack of proper physical examination of bony landmarks and the presence of swelling, deformity, crepitus and abnormal mobility.

(4) Imperfect reduction and after-care.

Statistical results show that from 20 to 71 per cent of elbow fractures have limited motion. This is due to several factors: (1) malposition; (2) time elapsed before reduction; (3) periarthritis; (4) improper after-care.

Complications following injuries to the elbow joint may be classed under the heads of deformity, limited motion and ankylosis. The deformity of cubitus valgus is rarely accompanied by limited motion, while cubitus varus is always accompanied by limited motion.

Limited motion in itself does not form an indication for operative intervention in the elbow joint provided that limitation of motion gives the individual a serviceable and workable arm. An elbow to be functional need not flex to 45 degrees, nor need it extend to 180 degrees. Elbow joints, however, in complete ankylosis or with only 5 to 10 degrees of motion, are a distinct handicap, and undoubtedly arthroplastic measures have been found perfectly satisfactory.

The method of approach to the joint may differ among different surgeons. In the main the requirements are:

(1) Proper exposure.

(2) Proper remodelling of surfaces in place of an excision in which the joint is always laterally unstable.

(3) The removal of all free pieces of bone, torn periosteum and sharp edges.

(4) Interposition of tissue to prevent reankylosis.

By this arthroplastic measure certain fundamentals are necessary if the result is to be classed as a good arthroplasty:

(1) The joint must have smooth, gliding motion in sufficient arc to be functional, usually from 45 degrees flexion to 165 to 170 degrees extension.

(2) The joint must be stable.

While this is not so important in the elbow joint as in arthroplasties of the knee and hip, it necessarily must be stable in order to stand up under constant use without the production in later years of arthritic changes from joint strain.

Dr. James S. Stone, Boston, Mass.—The most important thing in elbow fractures which we must look out for more and more is to prevent the need of arthroplasty by better early treatment. We must recognize exactly the type of fracture best treated by open reduction and the type best treated by conservative methods. Of course we must take into account, too, the age of the patient. The younger the child the less is the likelihood of ankylosis. One thing we must always remember is that very good function may result with very bad anatomical position in many cases, and function is infinitely more important than anatomical position.

Dr. E. Denegre Martin, New Orleans, La.—Dr. Cohn has been doing his work for several years and has gone about it in the right way. He has taken every step to learn about bone formation. I think an interesting set of x-ray pictures will be published very soon. Dr. Cohn deserves recognition in his work, and you can depend upon what he says.

Dr. J. G. DuPuis, Lemon City, Fla.—Does this radical treatment apply more to the old cases that have already ankylosed in adults or to recent ones in children?

I wish to emphasize the difference between fractures in children and in adults and their early treatment to avoid the necessity of treating permanent ankylosis by operative measures. In children we should wait a while before operating. A case to illustrate was of a boy aged seven years who fell down on the sidewalk and broke one of the epiphyseal bones of the humerus. It lodged in the articular surface. His arm was put up in the usual position and within six weeks the x-ray showed a large epiphyseal projection the size of a small marble in the articular surfaces. Six months later the boy had complete motion with no deformity without operative interference. Within the next year the same boy fell out of a swing and broke his other arm in almost the same way. With similar treatment he regained complete use of the arm in about eight months.

Dr. Cohn (closing).—Better results in these cases will come from better knowledge of the normal, better knowledge of the history of the accident and more careful examination of the patient. The time is not far distant when men will feel that they have committed a crime when they have to manipulate a joint and get crepitus to diagnose a fracture. Palpation, inspection and an x-ray examination is all that is necessary before the patient is anesthetized.

TREATMENT OF DEFORMITIES SECONDARY TO BURNS*

By O. L. MILLER, M.D., F.A.C.S.,
Charlotte, N. C.

While working with the North Carolina Orthopedic Hospital, it has been my privilege to see quite a group of deformities,

*Read in Section on Bone and Joint Surgery, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

Case 1

(a) Axillary burn with extensive adhesions of the entire upper forearm and hand to the chest. Much deltoid atrophy.
(b) Arm resting in first plaster dressing, with window for caring for wounds.
(c) Plaster dressing used for several months, for prolonged stretching of scar area.
(d) Showing range of shoulder and arm at end of treatment.

involving the extremities, caused by contractures from burns. The necessary application of various mechanical devices to correct or improve these deformities has naturally drawn them into an orthopedic clinic. Any encouraging result seeming to be obtained in any of these cases is due more, possibly, to the persistency and care of the corrective apparatus than to the true surgery. After the use of both surgery and appliances, physical education plays quite an important role in the restoration or improvement of function in the corrected limbs.

There are no rules, so far as I can learn, which one can follow in the treatment of the varied deformities seen after burns. The deformities do not fall steadily into types or classes as some lesions do. There is constant difference in location of the scars, or contractures, and difference in extent of deformity due to the depth of burn or character of treatment at the time of the accident. Burn injuries which I have seen have had no persistent care to prevent deformity. They have been allowed to heal in the position most agreeable to the patient.

In approaching the correction of these deformities, one has to keep in mind the functional and cosmetic improvement, with emphasis on the function. Many cases, though, deserve surgical interference for cosmetic reasons only.

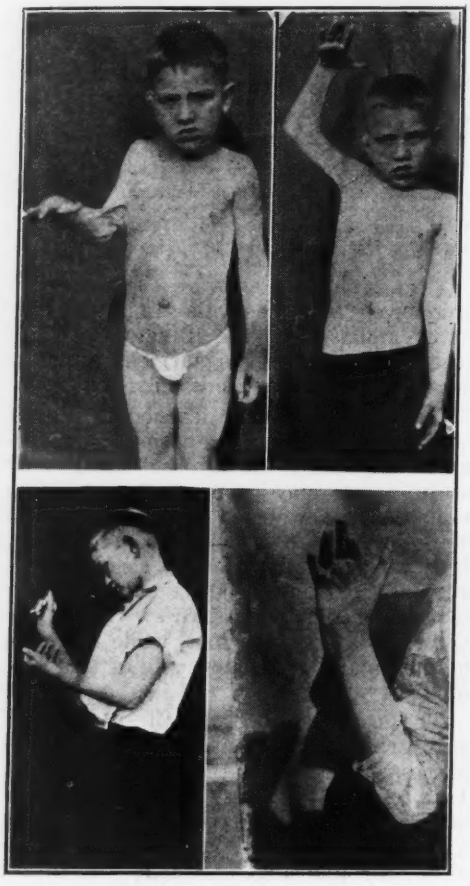
One lesson we have learned is that if one is too ambitious for cosmetic appearances, especially about the hand, very useful joints may be put out of commission. A rather flexed working finger is more useful than a well formed rigid one. It is very difficult safely to clear out the deep scar tissue in the palm and palmar surface of the fingers. Few burns involve the sole of the foot, while the palm of the hand is a frequent site of this type of injury.

The use of some or all the methods of skin grafting is essential to the complete success of the after-treatment of burns. In a variety of cases, such as are presented here, no set type of skin grafting can be adhered to, though very little free skin transplanting was done. It is my experience that the full thickness transplants are most satisfactory on the extremities when free graft is necessary.

In the cases shown here the injury occurred in early childhood. In the axillary cases, usually the child is wearing dresses, the skirts catch fire and the

flames concentrate in the armpit, burning the skin of both the arm and chest. So much heat here sears rather deeply. The arm is allowed to rest against the chest and attaches to it in time. The hands are usually burned from falling against a hot stove. In the foot cases the children were dropped in the fire by their elder brothers or sisters acting as nurse.

The principles found necessary to use have been careful surgery of the flaps, followed by prolonged mechanical support to hold the new positions obtained, plus the development of the parts by physical education.



TOP—Case 2

(a) Case quite similar to first case, and handled in the same manner.

(b) End result.

BOTTOM—Case 4

(a) Deep burn of the right palm, showing limit of extension of fingers.

(b) Showing same hand after skin transplant from abdomen, and treatment with physical education.

In every case, after carefully patterning the "swing flaps" from the available skin and dissecting out the scar, the raw uncovered area left was surprising and at times discouraging. In the axillary cases considerable tension could be put on flaps from the chest and in a few hours the skin would give comfortably and safely from its property of stretching and sliding. No free skin grafts were transferred into the axilla. Only swinging flaps were used and they were patterned from the skin about the area. There are no fixed rules governing the behavior of a skin graft after the surgery is done. In one case there was some infolding on the side of the chest, making it necessary to dispose of several square inches of rather poor looking skin. This skin was excised and dropped over in the bend of the elbow where there was want, but it could hardly be expected to live. None looked more healthy at the finish than this offcast.

At the end of two or three weeks, when there was retraction and raw areas in the center of the field of flaps, Thiersch grafts were dropped on the raw places in some cases. Sometimes they lived; often they did not. In most of the cases epithelium was very kind to advance early from all sides and cover skin deficiencies caused by retraction. We were fortunate in having no destructive infections.

Apparatus which is shown used during the convalescence of the axillary cases was not applied at the time of operation because it disturbed the margin of the flaps too much. The plaster casts are applied a week after operation and long windows are cut for the wounds. Later when the wound is well the spica becomes an abduction splint, with the arm free above, and is worn many weeks. In the arm cases, as soon as they are healed, the patient is put to swinging on a trapeze to stretch as much as possible the remaining subcutaneous scar. There seems always to be, in spite of every effort to eliminate it, some remaining or recurring scar.

In this series there are three hand cases. In one, where the fingers were tightly fixed on the palm, but still had strength in the extensor tendons, the scar was dissected from the palm and a flap was transferred from the abdomen in two steps. This flap lived wholesomely. At first it looked out of place in the palm, but after some months' use the subcutaneous fat absorbed, the skin toughened, and began to take on the appearance of neighboring skin. This hand materially improved in function and certainly cosmetically. A large flap was planned for and the proximal skin edge in the hand was grown to first. This facilitated blood supply. The abdominal flap, when it finally rested in the palm of the hand, had reduced to less than one-half its original square surface. There is immensely more retraction in free skin transplants than in the swinging flaps. In another hand case where both the first and the fifth fingers were lost under the skin, and all fingers contracted, the thumb was dissected out, amputated, and the skin off the thumb was relayed into the palm. Pulling out flexed fingers too fast under anesthetic and grafting over raw areas is attended with danger of destroying the small joints and paralyzing or evulsing tendons. In the second hand case, the fingers are still quite flexed but very serviceable for labor.

TOP—Case 3

(a) Axillary adhesions.
(b) Under treatment.
(c) End result.

BOTTOM—Case 6

(a) A flat foot acquired from a burn, in which the outer three toes were lost and extensive web and scar formation extended over the peroneal side of the foot and leg.
(b) After plastic skin graft and plastic bone work for correction of flat foot.
(c) End result.

In the foot cases the scar contractures gradually disturbed the bony relations. In one case we have a marked flat foot, and in another a club foot. The swinging skin flaps were used to give the feet the best possible covering of good skin and later at other operations the bone pathology was attacked according to the foot deformity.

Plastic work on both the soft structures and bones following burns in children is encouraging in its results when planned along rational surgical lines, and the use of mechanical apparatus is persisted in for sufficient length of time. The cases do better in an institution, at least until they have had some re-education of the part under treatment. Traction on scar tissue for a long time after operation gives range which the same scar did not have originally.

(Illustrated with Lantern Slides.)

12 West Seventh Street

TOP—Case 5

(a) A hand burn with extensive adhesions and binding down of thumb and fingers.

(b) This hand is somewhat improved. Being too ambitious for a cosmetic result in this type of deformity jeopardizes function.

BOTTOM—Case 7

(a) Left foot, an acquired club foot from burn. Web formation on dorsum of foot, much bone hypertrophy on outer aspect of medio-tarsus, with rotation and pitching inward of metatarsal shafts.

(b) After plastic skin work and correction of the foot deformity.

DISCUSSION

Dr. R. Tunstall Taylor, Baltimore, Md.—This subject naturally divides itself into three parts.

Firstly, when a child is severely burned, the first consideration is to check the suffering of the patient and in doing so quite often we allow the patients to assume any position they choose. The prevention of deformity should be thought of primarily by us in dealing with these cases. We know within limits, usually, what deformities are going to occur from burns in the arms. We know that the arm will be adducted by burns in the axilla. The arm will be flexed from a burn in the elbow and we will have a wrist drop with contraction of the fingers from a burn in the hand. Consequently, we should extend the arm and extend the elbow and put the hand in dorsal flexion, maintaining this position until the condition heals. With a burn of the dorsum of the foot, in the popliteal space and groin, we also have a tendency to bad contraction. These conditions are to be prevented by proper splints to save a great deal of treatment later on.

Secondly, if we have very exuberant granulation tissue we know it is apt to contract. We must counteract that tendency by Dakin's solution, ambrine, silver foil and scissors to promote epidermization.

Thirdly, these cases are usually seen late by orthopedic surgeons when they have the terrible deformities that have been shown on the screen. Our experience has been that the Krause whole thickness skin graft gives us much more freedom of motion in the joints than anything else in restoration. We have tried the Ollier-Thiersch and Davis pinch graft, but nothing has been so satisfactory as the whole thickness graft with fat. In the axilla we can obtain this graft from the back and turn it around. In the elbow cases we resort to a pedicle graft with pedicle or cuff from the abdomen respectively for the front or back of the wrist or a pedicle graft from the arm. If the burn is at the knee we can get the grafts from the dorsum, or opposite thigh, and on the dorsum of the foot from the opposite calf. The whole skin graft with an appreciable amount of fat is the *sine qua non*.

PROPHYLAXIS IN OBSTETRICS*

By IVAN PROCTER, M.D.,
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The greater part of obstetrical work is still being done by the general practitioner, and it is just as important for us to work out the fundamental protective steps for the multitude as it is to produce ultra-scientific methods that can be used for the few in maternity hospitals.

It is not necessary to have new methods in obstetrics to reduce the present morbidity and mortality. The scientific, conscientious use of well known procedures will lift our art to a plane on a level with the highest standard of surgery.

The science of obstetrics belongs entirely within the field of preventive medicine. The obstetrician who does not practice in a prophylactic way is not giving his patients what they deserve. Practically all of the complications and many of the diseases that befall the pregnant parturient and puerperal patient (with her offspring) can be prevented.

*Read in Section on Obstetrics, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

Next to the actual pain of labor, nausea and vomiting causes the average woman more concern than anything else. Early toxemia often lays the foundation for a morbid condition throughout pregnancy, resulting in complicated labor and slow puerperal convalescence. This condition can be greatly benefited or cured in most patients. It is unfortunate that so many women believe it to be a natural accompaniment of pregnancy and wait until a real toxemia exists before seeking relief. Each patient should be given a thorough physical examination, eliminating all foci of infection in the teeth, gums, tonsils, nose, kidney, cervix, etc. Any post-nasal catarrh should have appropriate treatment. The lungs, kidneys, bowels and skin should be stimulated to normal activity. A deficient liver function as shown by Moore's[1] application of Widal's hemoclastic liver function test should receive careful attention and the patient should be watched in the latter half of pregnancy for pre-eclamptic symptoms. This test, although still in its infancy, promises to be of considerable value in the early diagnosis of eclampsia. Proper diet, sedatives, visitors, relatives and environment play an important part. The intravenous use of corpus luteum is almost a specific in a large number of patients.

When physicians pay more attention to the annoying symptoms of pregnancy and use their best efforts in making life more pleasant during this distressing period, fewer abortions will be done and the women will report earlier in pregnancy.

Syphilis plays its part in infant mortality. Thirty-five per cent of a large series of fetal deaths reported by Williams[2] was due directly to syphilis. Its frequency should be kept as constantly in our minds as toxemia and its detection and treatment should be as thorough.

Other causes of prematurity, as fatigue, strenuous exercise, purgation, excessive coitus and rough or long automobile riding should be guarded against by proper instructions.

Late toxemia, commonly called eclampsia, is the most important disease during pregnancy. It occurs frequently in patients not under proper supervision and rarely in patients receiving modern prenatal care.

Beck[3] reports on 3000 obstetric patients at the Long Island College Hospital. In the first 1000 with no prenatal care there were 76 infant deaths, under two weeks. In the second 1000 with nurse supervision there were 47 deaths. In the third 1000 with prenatal care there were 25 deaths and only four toxemias.

The frequency of eclampsia is a great deal higher than is commonly thought. It ranges between 1 in 79 patients according to Cragin to 1 in 134 patients according to the New York Lying-in statistics. Every pregnant woman is potentially a case for eclampsia and proper prenatal care is the best life insurance for these patients. Eclampsia belongs in the group of preventable diseases and it should be studied largely from that standpoint. Almost every case of eclampsia is preceded by pre-eclamptic symptoms and signs which if properly interpreted and treated will reduce the mortality to a minimum. Pre-eclamptic conditions are recognized by a train of symptoms familiar to us all, headache, dizziness, nausea, etc. A rise in blood pressure is the most important sign. This precedes by many days the toxic pictures in either blood or urine (Polak).[4] Albumin and edema, two signs previously used to diagnose toxemia, in our experience are unreliable. Many patients with marked edema never have eclampsia, while others with clear urine have all the pre-eclamptic signs and may develop convulsions at once. In fact, kidney involvement[5] often seems to be secondary, as evidenced by the fact that we see patients in whom clinically the kidney is not involved or not until late, although the case is typical in every other respect. The study of the eyegrounds is a most important diagnostic procedure. Hemorrhages and edema are seen in the fundus for some time before the patient complains of symptoms. The diagnosis of toxemia of pregnancy[6] is the most important in the field of obstetric art. Rigid treatment must be instituted in all pre-eclamptics in

order to save those that rapidly reach the climax of the disease.

The normal blood pressure for the individual pregnant patient having been established by frequent observations throughout pregnancy, our plan is, that if a rise in blood pressure is noted, an immediate non-protein diet is ordered. If there are other symptoms such as headache, dizziness and nausea the patient is given absolute rest in bed on a milk diet. The bowels are opened and water is administered freely. If the symptoms are more urgent even milk may be restricted and glucose given per rectum. If the patient improves under this treatment she may be allowed up in a few days, but should be watched carefully until after delivery, as it is often necessary to repeat the treatment. If the blood pressure continues to rise and pre-eclamptic symptoms persist in spite of rest, elimination and restricted diet, labor should be induced. The patient is relieved of the pain and shock of labor by the use of morphin and scopolamin and labor is terminated by the least shocking method for the individual patient, whether it be version, perineal forceps, or natural delivery. We have found this plan of treating pre-eclamptics most satisfactory and believe that rigid treatment early and induction of labor in persistent cases is the only hope for reducing the present horrible morbidity and mortality.

Post-maturity had received very little attention until the past few years. Reed[7] of Chicago has demonstrated the importance of a woman's being delivered when the fetus is mature. It is a well known fact that some women will develop a mature child in a shorter length of time than others. The purpose of pregnancy is to develop a living mature infant with a weight of 7¼ pounds and a total length of 50 centimeters. When this has been accomplished, pregnancy should theoretically come to an end. By the use of the Ahlfeld and McDonald measurements we can determine for practical purposes when the fetus is mature. If labor does not take place at this time the patient should be watched very closely. If no signs of disproportion are detected by forcing the fetal head into the pelvis pregnancy can be allowed to continue for a reasonable length of time. However, if it continues for 10 to 14 days beyond term and definite maturity, or if there is any disproportion, labor should be induced at once. This procedure will not only reduce the ill results of hard, tedious labor, but will help to lower our high fetal death rate.

Ehrenfest[8] has stated that 40 per cent of necropsies performed on stillbirths and babies dying a few days after delivery show definite intracranial lesions. Hard, tedious labors help to make up a large number of these lesions. He urges the use of x-ray, lumbar puncture and detailed physical examinations in all babies presenting abnormal signs. Many can be saved by proper diagnosis and treatment.

Sharpe, of New York, read a most instructive paper on "Intracranial Hemorrhage in the Newborn" at the last meeting of the American Medical Association. The striking points in Dr. Sharpe's paper were the frequency of hemorrhage in the newborn, 9 per cent in 100 consecutive cases. He stressed the importance of looking for hemorrhage in babies born after long, tedious labors and the futility of trying to diagnose hemorrhage without spinal puncture in cases that are not of the extreme variety.

The greatest means of lowering maternal morbidity is the use of methods to make labor easy. Suffering during labor just as during an operation produces shock and exhaustion. In labor it lowers resistance, increases the chances of infection and prolongs the puerperium. Women who are relieved of the agonizing pains of labor are in much better physical condition than their sisters who follow the rule of "Let Nature take her course." The conservative use of morphin and scopolamin or nitrous oxid is doing more to make obstetrics a branch of scientific medicine in the eyes of the laity than anything else.

The substitution of rectal for vaginal examination is the greatest prophylactic step in the aseptic conduct of labor. Although this cannot be compared in safety

with abdominal or no examination, if conducted properly it is far safer than the vaginal route. After carefully and gently passing the gloved finger into the rectum, the pelvic cavity is surveyed in the same manner as per vaginam. The engagement, presenting part, amount of dilatation and progress of labor are the points determined. There may be some difficulty in the beginning, but a little practice will educate the finger to gain all the information needed in the average case.

Episiotomy in properly selected cases helps to prevent the injury of the pelvic muscles, fascia and perineum. Many patients who try constantly for one or more hours to force the fetal head up over the perineal body will be saved a unilateral or bilateral rent in the levator and at times a tear of the pelvic fascia from its bony attachment by a moderate lateral or median perineotomy.

Pituitrin, a dangerous obstetric drug, is gradually finding its place in the third stage of labor. Although it can sometimes be used safely in small doses in patients that have progressed to the perineal stage, it has often caused untold damage to both mother and child, where sufficient time was not allowed for molding of the fetal head and stretching of the maternal soft parts. We consider it safer to anesthetize the patient and apply low forceps, placing every step under the control of the operator, than to use pituitrin. We do, however, use it at the beginning of the third stage of labor, believing that it reduces the total loss of blood, forestalls the danger of post partum hemorrhage and hastens complete separation of the placenta.

The practice of leaving puerperal patients to convalesce under their own guidance and the haphazard instructions from friends is a grave mistake. Although the immediate danger to life is gone after a successful delivery is accomplished, the danger of a miserable existence with many complaints and maladies is just beginning. Next to lacerations, retroversion is probably the excuse for more pelvic operations than anything else. Proper post-partum treatment will prevent many of these operations. Lynch has demonstrated that 72 per cent of retroversions following labor can be corrected by the use of a pessary.

As soon as we look upon reproduction as a function meant to be normal but usually abnormal in some respect, when we teach the public the importance of proper care for obstetric patients and the potential dangers wrapped up in this function, when we give these patients the same detailed scientific care and attention that we give patients with typhoid, pneumonia and acute appendicitis, then we shall see some of the results for which all of us are working.

The title of this paper covers such a vast field that it has been impossible to consider any one subject in detail. It is hoped, however, that the discussion will bring out many points of interest to the profession and of benefit to our patients.

BIBLIOGRAPHY

1. Moore, Oren: Application in Pregnant Women of Widal's Hemoclastic Liver Test. N. C. State Medical Society Transactions, 1923.
2. Williams, J. Whitridge: Penn. Med. Jour., 1921, xxiv, 290.
3. Beck: J. A. M. A., 1921, lxxvii, 457.
4. Polak, J. O.: American Jour. Ob. and Gyn., February, 1922, 155.
5. McPherson, Ross: American Jour. Ob. and Gyn., July, 1922, 52.
6. Davis, E. P.: Complications of Pregnancy, 56.
7. Reed, Chas. B.: So. Med. Jour., April, 1922, 286.
8. Ehrenfest, Hugo: American Jour. Ob. and Gyn., July, 1922, 61.

DISCUSSION

Dr. M. P. Rucker, Richmond, Va.—An all-round obstetrician must be well grounded in preventive medicine, a sensible endocrinologist, a skilled diagnostician, and a clean surgeon. Dr. Procter has told us everything to do for a pregnant patient except to weigh her. By following her weight we have some guide in the loss of weight, in the early months of pregnancy, in the amount of damage a toxemia with vomiting is doing, and in the latter months in the too rapid gain of the accumulation of fluid. A rapid gain in weight will sometimes show before edema is apparent, and in any case we have a measure of the amount of fluid.

Backache from relaxed sacro-iliac joints can be relieved as suggested by Litzenberg, by pelvic strapping or a pelvic belt.

As Dr. Procter has said, the best way to treat eclampsia is to prevent it. Dr. Baughman has already told us how to treat it when it comes. This can be done only by proper prenatal care. Some time ago I had occasion to look up the results that we were getting at our dispensary. I asked the nurses to get out, without selection, enough histories to get the results of 1000 cases.

They traced up for me some 1019 cases and there was not a maternal death. Two patients developed eclampsia. They had been warned beforehand, but refused treatment. However, the nurse was so much on the job that when the first convulsion appeared the patient was gotten into the hospital and under treatment with no loss of time. This shows what can be done with an ignorant negro population.

I wish to endorse what Dr. Procter has said about the post-mature child. With the Ahlfeld and McDonald measurements we can accurately determine the size of the child, as accurately or more so than with the history of the case. With these measurements and the history, if that can be obtained, we should avoid an oversized baby. Brown, in a study of 300 autopsies in Edinburgh, concluded among other things that in primipara, certainly, it is better to terminate pregnancy two weeks before time.

I do not think Dr. Procter emphasized sufficiently the curative effect of lumbar punctures. In these cases this procedure is not only diagnostic, but is the best means we have of relieving the condition. The punctures should be repeated until there is no more blood.

I believe episiotomy has a place when you do not have a skilled anesthetist to relax the perineum. I would advise it in such conditions from the standpoint of the child, to relieve its head from the terrible pressure of a rigid perineum.

Dr. Oren Moore, Charlotte, N. C.—For a number of years we have been slowly drifting away from educating the men in medical colleges in the basic principles of medicine, surgery and obstetrics, but rather have been making specialists, who take up collateral branches. Now the trend is slowly coming back to the old branches. Less than two weeks ago Stengel, of Philadelphia, noted that fact in an address in my home town. Three or four years ago Polak called attention to the fact that in reviewing the mortality statistics in the United States an alarming situation showed: that the maternal death rate had increased rather than decreased, in spite of better obstetrical procedure and a progressive obstetrical science. He sought for the cause and found it in part due to lack of obstetrical education in colleges. In my day we were required to see fifteen deliveries before we graduated. With that equipment we were permitted to go out and do obstetrics. Could you imagine a man's being allowed to take out a pair of tonsils because he had seen fifteen tonsillectomies? There is no question that the inferior training given in colleges results in a larger mortality in obstetrics. The general practitioner, experimenting with purely expert methods of delivery, has brought disaster upon himself and his patients. But higher standards of education in medical colleges in obstetrics will reduce our death rate.

I am called a prenatalist, one who makes every effort to secure a healthy baby and deliver a normal, healthy mother. Until we realize that prenatal care is an integral part of medicine, we shall not have the results that can be obtained. Until we assume the responsibility of the pregnant woman and then thoroughly equip ourselves for this work, the death rate among babies and mothers will be in the hands of the obstetricians. You cannot keep a woman from dying in labor if she does not present herself early, but when she does present herself she shifts the responsibility from her shoulders to yours. In my part of the country, and I think it is true of the South, obstetrics is being practiced in a lamentably poor way.

Dr. Prentiss Willson, Washington, D. C.—There is one point that should not go without some comment, and that is the question of the induction of labor in so-called post-maturity. I have no doubt that a few women carry the fetus beyond the normal term of pregnancy. I have no doubt also that some fetuses will at a much earlier stage of pregnancy than others acquire size and weight which renders labor more difficult. But to advocate the general induction of labor at any period in advance of the full term as reckoned from the date of the last menstrual period is advocating a procedure that will be fraught with great danger and one which will result in a maternal and fetal mortality that we would not otherwise obtain. It is possible that such a procedure would save a few babies, but I am confident that you would lose a much larger number from ill-advised attempts to interfere with the time of labor.

Dr. Procter (closing).—I want to agree with Dr. Willson. You must individualize the cases, not induce labor as a matter of routine.

I would like to ask Dr. Moore to say a word about the liver function test.

Dr. Oren Moore, Charlotte, N. C.—It is evident that we are changing our idea of the original cause of toxemia to some other locality than the kidney. All work seems to point to the liver as the original organ which fails to handle the toxic principles of pregnancy. In 1921, Widal and his associates brought out the report on the Widal liver function test, and after Theobald and a number of other investigators had proven it was true, it occurred to us that if the liver was responsible for the original toxemia in pregnancy, then by applying the Widal test to early cases and watching them all through and to see whether a positive Widal case had eclampsia before the end of pregnancy, we should find out if the liver was truly a factor. We have a report on 125 cases since March of this year. So far we are in position to state that in all probability the Widal test is a true test of this toxemia.

The test consists of introducing into the stomach a standard protein meal of 250 mils of skimmed milk and immediately afterward taking the white blood count. Widal and his associates have proven that the normal liver responds in a half hour. If the liver function is impaired the protein-fixing function of the liver is impaired and then a leukopenia will follow. In other words, normal reaction to the standard protein meal is a leucocytosis, therefore a leuko-

penia will show a failing liver function. After taking a preliminary white coupt, we give these women a Widal meal and then at half-hour intervals thereafter for two hours take the white blood count. If it goes down we decide we have insufficient liver function. We have followed these cases and have found that almost invariably those who show leucopenia after the test meal develop some form of toxemia before delivery. One doctor reports 25 cases in which the test was applied. Four of those were positive and three came to delivery with pre-eclamptic symptoms. The fourth has not yet come to delivery, but she is only eighteen months from her last delivery, at which time she had true jaundice.

My suggestion is, try it in the early stages.

STRANGULATED HERNIA COMPLICATED BY PERFORATION OF THE AFFERENT LOOP

By LEIGH F. WATSON, M.D.,
Chicago, Ill.

Postoperative perforation of the afferent portion of the intestine is a rare complication of neglected strangulated hernia which may occur when intestine of doubtful viability is returned to the abdominal cavity. As a rule, it is the result of failure of the surgeon to examine the afferent loop for some distance above the site of constriction.

Proximal perforation of the intestine is more frequent than is generally supposed. On account of the distention of the afferent loop edema and ecchymosis develop followed by inflammation, gangrene and ulceration as in ordinary strangulated hernia.

The operation for strangulated hernia, especially if the condition has persisted beyond two or three hours, should always be followed by a thorough and painstaking examination of the afferent loop of intestine for a distance of one or two feet beyond the point of strangulation for raw spots, ulcerated areas and minute perforations. Suspicious patches of gut, if small, should be covered with an omental flap; if large, it is often advisable to bring the questionable loop out into the wound and cover it with warm, moist, vaselined sterile dressings for a period of 12 to 24 hours. If the color does not return under this treatment the intestine is gangrenous. If the color returns, the loose plastic adhesions can be

readily broken down and the intestine may be replaced in the abdominal cavity without anesthesia or after a simple local anesthesia infiltration of the muscles and skin, the intestinal serosa being insensitive. In neglected cases the outlook may be grave.

If the intestinal rent is small and adhesions have time to form and localize the peritonitis, the outlook is fairly good. Should the peritonitis become general, the prognosis is grave and unless operation is resorted to promptly, the patient usually dies.

The treatment for postoperative intestinal perforation is a prompt exploratory laparotomy. The rent in the intestine must be found and closed. The intestinal suture line should be protected by a flap of omentum if it is available, the wound should be closed with drainage, the patient placed in the Fowler position and treated for peritonitis.

EYE, EAR, NOSE AND THROAT

SOME USES OF LOCAL ANESTHETICS IN OPHTHALMIC SURGERY*

By EMORY HILL, M.D.,
Richmond, Va.

The writer desires to call attention to three methods of diminishing the dangers attending operations upon the eye. These are not new methods, but they are not practiced so generally as they should be. They are: (1) akinesia, or paresis of the orbicularis through injection of the upper branches of the facial nerve with novocain; (2) more profound anesthesia of the eye by subconjunctival injection of cocain; and (3) local anesthesia instead of general for enucleations by deep orbital injections of novocain.

(1) In 1914 Van Lint, of Brussels, proposed the blocking of the upper branches of the facial nerve as a sure means of preventing the squeezing of the lids which is so dangerous in the course of cataract operations. This procedure he described as "regional paralysis," which is analogous to "regional anesthesia," a motor nerve being subjected to the influence of an anesthetic drug in the one case, a sensory nerve in the other. While it is easy to reach the facial nerve at the styloid process, Van Lint preferred to attack only those branches which are concerned with the orbicularis palpebrarum. He used a 0.5 per cent novocain solution injected with a long needle passed beneath the skin from a point 1 centimeter temporal to the junction of the outer and lower orbital rims, horizontally to the side of the nose, injecting the solution slowly as the needle was withdrawn. A second injection was made from the original puncture upward and forward to the orbital roof, again injecting as the needle was withdrawn. Sufficient paralysis followed in five minutes, and it could be hastened by massage.

Villard, in 1919, without knowledge of Van Lint's paper, proposed the same procedure with slightly different technic, using 1 per cent novocain or 0.66 per cent cocain. From his own experience he drew the following conclusions, which the further experience of many surgeons justifies:

1. Peripapillary injections of an anesthetic liquid (cocain or its substitutes) produce a very marked, but temporary, paresis of the orbicularis by interruption of the nervous influences from the facial nerve.

2. These injections are absolutely without danger provided they are practiced with a solution aseptic and sufficiently diluted.

3. Temporary paralysis of the orbicularis which follows these injections facilitates in large measure all operations which necessitate a large opening of the globe by suppressing the reflex and involuntary contractions of the lids which make liable the expulsion of the intra-ocular contents.

4. These injections are particularly indicated in the operation for cataract by rendering virtually impossible an expulsion of the vitreous.

5. These injections are absolutely indispensable in intracapsular cataract extraction.

6. They are also indicated in some less frequent conditions, as excessive blepharospasm and acute glaucoma when an iridectomy is to be done.

Prof. Barraquer, of Barcelona, when in this country last year, practiced akinesia and his demonstrations impressed the writer with the advantage of this safety devise. The one drawback was the stitch taken to hold the lids together. This may be omitted, according to the experience of many operators. Barraquer makes the injection in three directions: along the lower orbital rim horizontally, up toward the brow, and downward toward the cheek.

During the past year the writer has practiced akinesia with entire satisfaction according to Barraquer's technic, omitting the suture. Tincture of iodin is applied to the skin; 1 per cent novocain is used, the injections going deep to the periosteum. A long needle is inserted 1 centimeter back of the junction of the outer and lower orbital rims and passed in three directions, upward, nasalward and downward, 1½ inches each, and with-

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Seventeenth Annual Meeting, Washington, D. C., Nov. 12-15, 1923.

drawn slowly, the injection being made as the needle is withdrawn. Only one puncture is necessary, the direction of the needle being changed under the skin. Two cubic centimeters of fluid is sufficient. The writer has made first a superficial injection, in nervous patients, with a very small needle, thus avoiding the pain of a puncture with a large needle. Gentle massage spreads the fluid and hastens its paralyzing effect. If the injection is made within one or two minutes after the first instillation of cocain, there is no delay in beginning the operation as soon as the usual preparations are completed.

The sense of security given by the knowledge that the patient cannot make forcible movements of his orbicularis is such that the writer feels that he will not be willing to do a cataract extraction again without this precaution. He is satisfied that four eyes have escaped damage by this means: one patient had paralysis agitans; two were badly frightened and could not control the movements of the eyes; and one had a slight hypertension which allowed spontaneous delivery of the lens as soon as the anterior capsule was opened without pressure's being made on the eye. Additional lid pressure, in this nervous and very deaf patient, might easily have brought vitreous also.

If the speculum is discarded and lid elevators are used instead, there is even less possibility of pressure upon the globe. Vitreous loss is, of course, not the only disaster in operations which call for a large opening of the eye ball, but it is so frequent, and at times is so serious, a mishap that any measure which prevents it is of very great value and deserves to be adopted as a routine. The writer has seen no harm follow it. The paralysis is not complete and the lids can be gently closed. The continued relaxation for several days offers additional security in dressing the eye. There is no squeezing to break open a freshly sealed wound at the first dressing. This is a decided comfort to those who have not the temerity to leave the eye closed for a week after a cataract extraction. The writer has had the lids come open, allowing the dressing to touch the eye only once,and that occurred in a patient whose lids were distorted by a long-standing blepharo-conjunctivitis, due to dachryocystitis, and did not have perfect apposition. No harm resulted from this exposure. Vaseline protected the eye and a transient edema of the lower bulbar conjunctiva was the only result. Even the slight manipulation of placing one suture in the lids after cataract extraction complicates and delays the operation, and is to be omitted.

The thought of the consequences of one spasmodic movement of the orbicularis between the completion of the incision and the dressing in a cataract extraction has robbed the ophthalmologist of more than one night's sleep. In the practice of akinesia there is a means of preventing one of the most serious and hitherto uncontrolled dangers in ophthalmic surgery.

(2) Subconjunctival injection of cocain, in addition to its instillation, serves to anesthetize the iris more profoundly. Two or three minims of the 4 per cent solution ordinarily used can be injected beneath the upper quadrant of the bulbar conjunctiva. The bleb raised can be massaged away until only a moderate edema remains. This is not a hindrance to the making of a conjunctival flap in the incision for cataract extraction and the various glaucoma operations. On the contrary it has seemed to be an advantage. The possibility of sudden jumping on the part of a patient whose iris is seized with a forceps renders this step somewhat hazardous if the iris is not well anesthetized. Various methods of introducing cocain into the anterior chamber have been used. The subconjunctival injection is equally effective and does not offer the extra risk of inserting an additional instrument into the anterior chamber. The most conspicuous example of the virtue of this injection is acute glaucoma when an iridectomy is to be done. Local anesthesia is practicable here if subconjunctival injection of cocain is added.

(3) Among the many surgical procedures in which local anesthesia has been substituted for general is the operation of enucleation of the eye. The first surgeon to practice this, so far as the writer can discover, was Cocks, in 1884. He was followed shortly by our colleague, Dr. J. A. White, and numerous reports are to be found in the literature since then. For a

long time this was considered too painful, and general anesthesia was resorted to regularly. For several years the writer has used general anesthesia only in the case of children and of adults with eyes which are very difficult to release from adhesions to the orbital structures, as in panophthalmitis. The value of local anesthesia in enucleations was first impressed upon the writer by a case of hemorrhagic glaucoma following trauma in an elderly man who had a pyelitis with hemorrhages from the kidneys. Ether was not safe in this case, and in many cases it would better be avoided. It is entirely possible to do a painless enucleation if the usual instillation of cocain is followed by injection of cocain about the muscle tendons and further injection of 1 per cent novocain around the posterior pole of the globe. Anesthesia of the ciliary nerves is essential, and these are reached by means of a long curved needle, such as that used with an Anel's syringe. It is important to wait long enough for the solutions to produce their effect. Lack of success with local anesthetics easily follows upon undue haste. A preliminary dose of morphia is a valuable adjuvant to local anesthesia in enucleations.

DISCUSSION

Dr. W. H. Wilmer, Washington, D. C.—It has been truly said that in no surgical procedure is the surgeon more at the patient's mercy than in cataract extraction. To a lesser degree this is true of the other more serious operations upon the eye. This is due to forcible closure of the eyelids, contraction of the recti muscles, suddenly looking too violently downward, and other involutary movements of the eye or the head. As pointed out by Collins, it is very uncertain that any vestigial remains of the choanoid, or retractor bulbi muscle, exists in man of today. But it is very certain that there is at times a return to the primitive attempt at eye protection by a reflex contraction of the recti muscles as well as of the orbicularis. This has to be reckoned with in all operations in which the globe is opened. Pain, or the dread of pain, is the most fruitful source of these unfortunate reactions. Therefore, we are indebted to Dr. Hill for his very excellent description of his methods of producing a more profound local anesthesia in ophthalmic operations.

Shakespeare laments the vulnerability of the eye when he exclaims:

> "O why was sight
> To such a tender ball as the eye confined,
> So obvious, and easy to be quenched?"

All through the literature of surgery on the eye, the necessity of restraining the "squeezer" runs like the motif of a Wagnerian opera. The experienced Fuchs recommends the administration of bromid half an hour before operation. Even Smith, with his cataract extractions numbered by the tens of thousands, gives from 100 to 120 grains of bromid several hours before operation.

The method of temporarily paralyzing the orbicularis is used by a number of ophthalmic surgeons with notably good results. Personally, I agree with Dr. Hill in preferring the use of some synthetic product, especially novocain, instead of cocain, on account of the toxic qualities of the latter. This does remove one source of danger, but even then one must not be lulled into false security concerning the patient's ability to do harm. There always exists the potentiality of contraction of the recti muscles and forcible movement of the eye or head.

It is impossible to take too many precautions to protect the patient against himself. Therefore, it may not be amiss to mention the assistance of some general therapeutics, for these suggested drugs reduce muscular reflexes of all kinds. Without a knowledge of the effect of morphia upon the subject, its use before an operation is not without danger from nausea and vomiting. But where the patient is very nervous, and where it is certain that morphia is well borne, a hypodermic injection of morphia, ¼ grain, adds much to the safety of the operation, especially in glaucoma. In other persons with uncontrollable nerves, where the patient's idiosyncrasies are known, 1/150 grains of scopolamin with the morphia acts like a charm when given forty-five minutes before operation. I have found this very efficacious in persons who were so nervous that the eyes could scarcely be touched. In other cases where the use of morphia and scopolamin are not considered wise, the use of codein grains ¼ with bromid 20 grains one-half hour before operation is very effective. All of these suggestions presuppose the generous additional instillation of a local anesthetic.

I also heartily approve of the second of Dr. Hill's suggestions, the subconjunctival injection of a local anesthetic. But here, too, I much prefer the use of 0.5 per cent solution of novocain with adrenalin. Many persons present strong idiosyncrasies to the use of cocain. I do not find this true of the combined solution I have mentioned. With a plentiful application, by instillation, of a 1 per cent solution of holocain or butyn in addition to the subconjunctival injection, intra-ocular operations can be performed literally without pain.

As there is wisdom in a multitude of councillors, there is safety in a multitude of precautions to keep the patient from pain and the danger of untoward movements.

Dr. William Tarun, Baltimore, Md.—I wish to mention the advisability of using gas. If we use gas it is remarkable how promptly the operation can be done, how promptly they awaken, and how satisfactory it is. If you have a good anesthetist you can take your time just as under a general anesthetic. Of course, it cannot be used in children under three or four years of age.

Dr. S. B. Muncaster, Washington, D. C.—I have been using the subconjunctival injections of novocain in cataract extractions for about three years, and with success.

Dr. Hill (closing).—These methods are not new, and the injection of the facial nerve is not a panacea. It is simply one aid, and a very efficient aid. It does not by any means do away with the possibility of trouble. I am glad Dr. Wilmer mentioned that point.

TREATMENT OF CERTAIN FORMS OF ASTHMA BY REMOVING OBSTRUCTIONS OF THE UPPER RESPIRATORY TRACT*

By E. L. Posey, M.D.,
Jackson, Miss.

There are certain ailments to which human flesh is heir that are produced by well known agents. If a case of typhoid fever or diphtheria is reported, the etiology, pathology, treatment and prognosis enter the physician's thoughts. There are other ills which when mentioned mean but little from a pathological standpoint. Certain forms of asthma come under this head. It shall be my purpose in this short paper to speak of that type of asthma with a known etiology and give a brief report of some cases that have come under my care.

As to the etiology of asthma, many causes have been given. I shall consider a few of these before reporting the cases.

The local predisposing cause may be any form of irritation in the nose or pharynx, hypertrophy of the nasal mucous membrane, adenoid growths or hypertrophied tonsils. The exciting cause is usually some infection of those abnormal structures or of the mucous membrane of the bronchi. Under those circumstances, therefore, the paroxysm is often excited by exposure to high winds, dust, cold and damp air. The asthmatic symptoms produced usually last only so long as the infection. They are incidents in the infection. Attacks so produced generally occur only in small children and tend to cease with advancing age. The type of asthma seen in older children is much like that of adults and is infrequent in the first few years of life. These types depend largely upon the sensitiveness to some foreign protein. This is a phenomenon closely allied to anaphylaxis.

Asthma frequently occurs in children who in infancy have suffered from eczema, which is also often a manifestation of hypersensitiveness. The proteins to which asthmatic patients are sensitive are very numerous. Before it can be assumed that any protein is etiologically important in a given case of bronchial asthma, sensitization must be demonstrated by local cutaneous reaction. After the offending protein is disclosed in this manner the rational procedure is to withdraw it. If this is not practicable specific desensitization should be instituted and results carefully observed. The cutaneous test is employed and is the one of preference by most men doing this work. A number of tests may be necessary in a given case, but the task of working these tests may be expedited by the use of the group tests. These include food, pollen, bacterial and dust proteins. In a study of over 600 cases of bronchial asthma Walker found 300 patients sensitive: seventy-four, or 12 per cent, to food; 60, or 10 per cent, to bacteria; 100, or 16 per cent, to animal emanations; and 66, or 11 per cent, to pollen.

Food is the chief cause of asthma in infants. With the onset of asthma after the period of childhood food plays a minor role. More than half of the epidermal sensitizations are due to horse hair and dandruff. Rabbit hair found in pillows and mattresses is also responsible for a great number. Post-seasonal pollen asthma is not always due to secondary infection. Protein pollen intoxication is the cause in some cases and treatment with pollen extract clears up the asthma.

About half of the patients seen have bacterial asthma. The proteins of staphy-

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lococcus albus and streptococcus viridans occur in the order given.

The variations of reported cases by various workers may be accounted for by the difference in technic and interpretation of tests, preparations and number of proteins used, locality, occupation, age, and nationality of the patient and of onset and duration of asthma.

Occupation may have a direct relationship to the cause of asthma. A thorough history and physical examination are necessary accompaniments to a complete series of cutaneous tests in fixing the responsibility for paroxysmal dyspnea.

Many infants have been found to be suffering from enlargement of the thymus gland, which responds most satisfactorily to the proper treatment.

It is not the intention of this paper to deal extensively with the cause and treatment of the various forms of asthma, but more particularly with that type which has in evidence a marked pathology of the upper air passages. Therefore, I shall confine the remainder of this paper largely to the correction of the pathological findings.

I shall speak first of the respiratory embarrassments caused by enlarged thymus gland. According to Cunningham, the size of this gland varies relatively and absolutely with age, sex and nutrition, being relatively largest in infancy; absolutely largest at puberty; larger in females and the well nourished than in males and the emaciated; larger in hearty adults accidentally killed; and small in persons, even children, who have died of slow wasting disease. It is impossible to say what should be the normal dimensions of the gland at the various ages. In some newborn babes it weighs as little as two or three grams. In others as much as twelve to seventeen grams. At puberty it may be difficult to find or weigh as much as forty grams. The shape of the gland varies with its size and the age of the individual. In infants with short thoraces it is broad and squat. The location of the gland is significant. It is located in the superior and anterior mediastinum. It is connected by fibrous tissue strands to the tunica propria of the thyroid gland. It is apparent that an enlargement of the gland will affect normal respiration.

I wish to report briefly three cases that have come under my observation during the past three years, each different from a clinical standpoint.

Case I.—A negro child, male, age 4, was poorly nourished and underweight.

The family history showed the father living and in good health. He had a positive history of syphilis. The mother died one year previously of tuberculosis.

The past history was unsatisfactorily obtained except that he had had measles, smallpox, and whooping cough at six months.

Present Illness.—During the attack of whooping cough, which was severe and prolonged, breathing was labored throughout and several times the patient was thought to be dead. At intervals since then respiration has been poor. One week previously the grandmother had been awakened at night by the patient's efforts to breathe. In her own words the grandmother said: "He had to fight for breath." This continued until the following day when a physician was called. A clinical diagnosis of diphtheria was made and antitoxin was administered. No improvement was noticed. The next day antitoxin was again administered and each day afterward until the patient was brought to me.

Physical examination showed the following:

Chest.—Numerous rales and wheezing sounds were heard throughout lungs. Increased dullness was found around the parasternal region. The heart was normal in size, location and rhythm.

Enlarged glands of the neck were noted.

Abdomen.—No masses or tender areas were detected.

Head.—The teeth were in poor condition. The tonsils were large. There was no evidence of any membrane in the throat.

Temperature was 98.4°.

Laboratory report of the urine showed nothing abnormal, but there was a positive Wassermann.

X-ray report showed enlarged thymus gland.

Treatment.—X-ray and antisyphilitic treatment were instituted. The first application of x-ray produced a marked improvement. These treatments were given weekly for four weeks. At the end of that time the patient's breathing was normal and the gland showed a marked reduction in size. Antisyphilitic treatment was kept up for several months. The patient was seen twelve months after the last application of x-ray and to all intents was all right. No plate was made at that time, but percussion failed to show any increased dullness over the thymus gland.

Case II.—A white male child, age 3, with a history of a chronic malarial infection and re-

curring attacks of asthma, especially at night. He had been given antitoxin upon three occasions with no improvement.

Family History.—The father, mother and two brothers were living and well. There was no history of cancer, tuberculosis or syphilis.

Past History.—He had had mumps, whooping cough and scarlet fever. At the age of three weeks his mother noticed that his breathing was labored. The family physician was consulted and he stated that the trouble was due to a "cold" and would clear up presently. He gave the child something for the cold. There was a slight improvement for a few days, but soon another attack came on which was worse than the first. There had been a repetition of these attacks with short intervals of apparently normal breathing up to one month previously. At that time the patient's breathing became so poor at night that a physician was called. A diagnosis of diphtheria was made and antitoxin was given. No change was noted the following day and another dose of antitoxin was administered. This was repeated for four days, at which time a slight improvement was noted. One week previously the patient had another attack, which was worse than the one just mentioned. A dose of antitoxin was given and a mild anaphylaxis followed. That seemed to aggravate the trouble. In addition to the above, a history of recurring malarial attacks was obtained.

Physical Examination.—This showed an enlargement of the spleen and thymus. There were rales and wheezing sounds throughout the lungs.

X-ray findings confirmed the diagnosis of thymus enlargement.

Laboratory report of the blood was positive for malaria and there was a negative Wassermann. There were no urinary findings of any importance.

Treatment consisted of x-ray and antimalarial therapy. X-ray application was made once weekly for four weeks. There was considerable improvement after the first x-ray application. There has not been another attack of asthma since that treatment was begun. The patient has improved in weight and is apparently in perfect health. There is now no evidence of any thymus enlargement and the breathing is normal.

Case III.—This case was a child of 4 years, with a history of difficult breathing since birth, with attacks of asthma coming on at intervals. These attacks nearly always occurred at night. The patient had never learned to walk or talk. He was over-developed physically in every way.

When I saw him my first thought was of laryngeal diphtheria. A history was obtained which eliminated this. There was an enlargement of the glands of the neck, axilla and inguinal regions. Physical examination of the chest revealed an enlarged thymus gland. The other findings usually accompanying an asthmatic attack were present.

X-ray treatment was instituted with marked improvement after the first application. In addition to this, the glandular products were given. The attending physician administered the treatment every fourth day for two applications and once weekly for four weeks. This doctor quite recently reported that the patient had been free from asthma and had improved mentally to such a degree that occasionally he is now able to speak words.

Cases IV and V.—There were two other cases with histories of recurring attacks of asthma, ages 3 and 5, respectively. With the exception of occasional attacks of tonsillitis their past histories were negative except for asthma. Both had large tonsils which were infected and they had hypertrophied adenoids. No other cause for asthma could be located; and, as the tonsils were diseased, it was thought best to remove them with the hope of helping the asthma. These operations were done more than one year ago and the patients have had no evidence of asthma since then.

Case VI.—A male, age 36, who was a lawyer by occupation.

Family History.—This was of no importance as regards the present trouble.

Past History.—He had had the ordinary diseases of childhood. When sixteen years of age he had a severe "cold," which lasted unusually long and was accompanied by intense headache. This headache persisted for a long time and was relieved some six weeks after the onset by a purulent discharge from the right side of the nose. This discharge kept up for some time. A few months after the discharge stopped the patient had an attack of asthma which lasted for three days. Another attack came on within a few months. The patient had had these attacks from that time on. Colds and exposure to dust always precipitated and aggravated an attack.

Present Illness.—In October, 1922, the patient took a drive on a dusty road and the following night the usual attack of asthma came on. This was the most severe attack. The patient was confined to his room and bed for three months.

When called to see this man I found him in a sad plight. He had been able to sleep but little for three months and had eaten very poorly. The attending physician had gotten the history and suspected some sinus involvement.

An examination of the nose showed the presence of numerous polypi.

X-ray plates showed that the ethmoid cells were cloudy.

Treatment consisted of removing the polypi and breaking down and curetting the anterior and posterior ethmoid cells. This operation was done in December, 1922, and the patient has been free from asthma up to the present time.

Case VII.—A female, age 21, was a school girl.

Family History.—Her father, mother, and one sister were living and well. There was no history of cancer or tuberculosis.

Past History.—She had had the ordinary diseases of childhood and recurring attacks of asth-

ma since twelve years of age. The attacks occurred more frequently during the winter months and during dusty periods. She was unable to attend school the previous winter because of asthma. The attending physician thought the patient's teeth and tonsils were causing the trouble and advised their removal. That advice was taken, but no improvement was noticed after their removal.

Physical Examination.—The lungs revealed the findings that one would expect in an asthmatic of eight years' duration. The heart showed no murmurs. The apex was in the fifth interspace. The abdomen was negative.

The patient wore upper and lower dental plates. The tonsils and pillars were absent.

The right nostril was normal; the left inferior turbinate was enlarged to the extent that the patient was unable to breathe through the left nostril. The turbinate looked very much like a large overripe strawberry. All other tests for asthma were negative; and as this turbinate was interfering with respiration, the patient was advised to have it removed, which she did.

The submucous resection was done under local anesthesia in September, 1922, and there was an uneventful recovery.

The patient entered school two weeks later and did full work, completed the session, reentered school in September of this year, is going ahead with her work and has had no recurrence of asthma. Her health is better than ever and she weights twenty-five pounds more than ever before in her life.

Case VIII.—A male, age 28, and by occupation a farmer.

Family History.—His father, mother, two brothers and one sister were living and well. There was no history of tuberculosis or cancer.

Past History.—He had the diseases of childhood and typhoid fever at the age of 12 years.

Present Illness.—When the patient was 18 years of age his nose was broken during a fist combat. Six months afterward he had his first attack of asthma, which came on during a very dry and dusty season and lasted for eight days. Two months later a second attack occurred, this one more severe than the first. After that time the patient had from six to eight attacks each year. Dust and exposure to cold seemed to precipitate them.

Physical Examination.—This was negative except for a nasal septum which was markedly deviated to the left, and occluded the left nostril.

Treatment.—He was advised to have a submucous resection. The operation was done ten months ago and recovery was prompt and uneventful.

The patient has been free from asthma since then, and although there has been very much dust at times, there has not been the slightest symptom of the old trouble.

In reporting these cases, I do not mean to leave the impression that all cases of asthma are due to respiratory obstructions, and that removal of these will offer cure in all instances. I realize the importance of the hypersensitiveness of the proteins in asthmatics and the pleasing results obtained by the internist and pediatrician in this field. But when a case presents itself with definite pathology of the respiratory tract, it is well to investigate it and remove the pathology if one feels reasonably sure that these obstructions enter into the etiology of the condition.

DISCUSSION

Dr. Edward A. Looper, Baltimore, Md.—In the past few years too little attention has been given to the influence of obstructions and focal infections in the upper respiratory tract upon the production of bronchial asthma. We hear so much about the numerous pollen reactions and various food protein sensitizations these days that many lose sight of the fact that abnormalities and infections in the nose and throat play an important role in the etiology of this disease. If the patient should react to some specific protein or pollen it does not mean that his treatment should be limited to that particular feature alone, but in all cases of asthma a careful examination of the nose and throat should be made. If obstructions are found they should be removed. If infected areas are discovered, they should be eliminated.

The nose has an important physiological function to perform in preparing the air for the bronchi and lungs. The air must be warmed, moistened and filtered. If this function is interfered with by some obstruction, as hypertrophied turbinates, a deviated septum, or enlarged adenoids, the unprepared air becomes much more irritable to the hypersensitive mucous membrane which is so often found in these cases, the paroxysms being accentuated and made more frequent. So every effort should be made to get the nose as nearly normal as possible.

Focal infections in the tonsils, adenoids, sinuses and teeth are very common causes of asthma, and in every case very careful examination should be made of those structures.

More often these cases are first seen by an internist, and it frequently happens that insufficient attention is directed to the nose and throat. Often considerable trouble and expense could be saved the patient if, as a routine procedure, the nose and throat were the first to be investigated.

A case in point coming under my observation was a child 13 years of age who had been the rounds of physicians. He had been given numerous pollen tests; food reactions had been investigated and special diets outlined; and vaccines had been tried, but still his asthma persisted. I found a definite infection of the left

antrum which cleared up after simple puncture and irrigation, and there has been no recurrence of the asthma.

Another very similar case was a boy, aged 7, who had been through about the same procedure without relief of symptoms, until a polyp was removed from his left antrum. Since that time he has been free of asthma.

Children respond readily to treatment if the cause is found early and removed before there is a definite sensitization of the tissues. The relation of nasal polyps in adults to some cases of bronchial asthma has long been associated. Degenerated polypoid tissue, and disintegrating purulent exudate from chronically infected sinuses, is rich in protein material, which in itself is capable of producing anaphylactic phenomena, independent of toxic reactions resulting from various infecting organisms.

Dr. C. A. McWilliams, Gulfport, Miss.—I only wish to call the attention of the Section to the enlarged thymus gland, which heretofore has been recognized more post mortem than ante mortem. As a rule most of these cases heretofore have been operated for tonsils and adenoids, with fatal results. But we all know there is a direct connection between the nose and the bronchial tubes, as Dr. Coakley brought out in his paper yesterday. The main thing in this connection is to notice, especially in older people, that the nasal symptoms are not really a cause of the asthma, but are a part of the disease.

Dr. Homer Dupuy, New Orleans, La.—We all know that asthma is a protein sensitization presenting anaphylactic phenomena. I agree with the essayist that pathology such as paranasal sinus disease is an exciting factor, but I must disagree when he classifies the enlarged thymus gland in the category of asthma. Enlarged thymus is a distinct entity, with a different causation. It is true it does imitate asthma, its enlargement presses upon the trachea, giving rise to rales that imitate asthma phenomena, but it should not be classified as asthma. It is a distinct disease with a distinct etiology.

The Doctor has been most fortunate in observing three cases of enlarged thymus, and he is to be congratulated upon the results obtained with x-ray therapy. However, we should certainly go on record as differentiating pure asthma, a protein sensitization, from thymic enlargement, a distinct entity.

Dr. G. T. Brown, Washington, D. C.—I find it a great help in my work to classify asthma cases according to two types: typical bronchial or spasmodic asthma that can be found sensitive to some form of protein; and the other type, the asthmatic bronchitis or non-sensitive type. I believe a considerable percentage of these so-called non-sensitive cases is also due to some form of protein sensitization, and that we have merely failed to detect the offending protein.

How are we going to differentiate between the non-sensitive individual and the protein-sensitive individual? There is no absolute guide, but there are some helpful pointers, and the first is age of onset of the disease. Asthma due to sensitization nearly always comes on before the age of forty. Asthma that begins after forty is almost sure to be non-protein in nature, although I have seen patients at sixty apparently develop sensitization.

Another point is the presence or absence of acidophilia, both in the sputum and in the blood. The presence of acidophilia is very suggestive of protein sensitization.

Another point is the manner in which the attacks come on. Asthmatic bronchitis begins with coughing. They go to bed well and waken in the early morning with a coughing spell. In the sensitive type of asthma, shortness of breath precedes the cough.

I agree that thymic, cardiac or renal dyspnea should not be called asthma, and I believe the day is not far off when nothing will be called asthma except those cases due to some form of sensitization.

The essayist touched upon the question of bacterial sensitization. The cases that are sensitive to food, animal epidermal and pollen proteins are very definite, and I believe 90 out of 100 can be cured by elimination of the offending foods or by removing the offending proteins from their environment and by specific protein therapy. But what about the non-sensitive cases? For several years I have been trying to work out a way to handle these cases somewhat different from the use of stock vaccines or surgery. I have seen cases that were relieved by surgery, but I think the study of the case should not only include careful nose and throat examination and general physical examination, but every asthmatic should be studied from the viewpoint of protein sensitization.

Coming back to asthmatic bronchitis cases, how are we going to find what bacteria they are sensitive to? A common way of treating these cases is to give them stock vaccines. I am opposed to that. If we cannot find them sensitive to food, animal epidermis or pollen, I test them with polyvalent bacterial proteins prepared from different strains, and when I get a reaction I attempt to isolate that same organism in the patient's secretions. If I am able to do that, it checks up fairly well, and I have seen such cases completely relieved of asthma in about three treatments. If he does not react I culture the sputum and the throat and nasal secretions, isolate the organisms and make intradermal tests, using normal saline with a trace of agar as a control. Then if in twenty-four hours there is a reaction I select that organism for treatment. In this way I get two out of three non-sensitive cases well. In the sensitive cases I believe 90 out of 100 can be cured.

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URINARY CALCULUS

If future investigations confirm Hunner's[1] views of the relationship of ureteral stricture to the formation of ureteral and renal calculi, those primarily interested in the etiology of this pathological condition will be obliged to give more attention to the factor of drainage than has been the case in the past. To the victim of this disease and to the clinician these findings will mean a great advance in therapy.

According to the generally accepted views of the formation of urinary calculi, there is in every stone a matrix, or framework, of some organic material, such as mucin, urochrome, albumin or fibrin, upon which as a skeleton is deposited the precipitated urinary salt. Every crystal forming in the urine has an organic (colloid) skeleton. Crystals such as uric acid, calcium oxalate and triple phosphate are usually reversible, that is, they go into solution again if the containing fluid is not saturated with the salt. Some of the colloids, such as mucin and urochrome, are also reversible, and when these form the groundwork of a stone, it is possible for such a stone to be dissolved. Thus, in the "uric acid infarct" of the infant's kidney there is a deposit of uric acid around a urochrome foundation; and a thorough flushing may result in a dissolution of the stone.

According to Schade,[2] the determination of permanent calculi depends upon the presence of an irreversible colloid as the organic framework. Such irreversible colloids as albumin and fibrin are not found in normal urine. Some injury to the kidney or ureter resulting in the secretion of albumin or the exudation of fibrin would furnish the irreversible colloid as a potential framework for the collection of urinary salts entering into the nucleus of a calculus.

Ureteral stricture is considered by many workers one of the most frequent lesions of the urinary tract. It may be seen that the narrowing of the ureteral lumen caused by stricture eventually leads to urinary stasis of an intermittent or permanent character.

The frequent occurrence in stricture cases of albuminuria or hematuria is evidence of kidney damage as a result of the stasis. Infection of the urinary stream is found, according to Hunner, in about twenty per cent of all ureteral stricture cases. Some of these infections may occur concomitantly with the primary one that invades the ureteral wall and lays the foundation for the stricture, but it is probable that most of them are secondary and due to the stasis.

Many writers believe that damage to the kidney from infection is essential to the formation of stone, but there are so many

1. Hunner, Guy L.: Ureteral Stricture: Report of Unusual Case, Illustrating Influence on Formation of Urinary Calculi and on Recurring Calculi. J. A. M. A., 1924, 82, p. 509.

2. Schade: Beitrage zur Konkrementbildung. Munch. med. Wchnschr., 1909, xvi, 1, pp. 3-7 and 77-80.

urinary calculi found associated with sterile urine that this question is still unsettled. Ureteral stricture is for the most part dependent upon a distant focal infection, and it is likely that in a certain proportion of cases the kidney tissues are subjected to repeated injury by toxins or micro-organisms from the same source, and that the albumin and blood found in these stricture cases may be due either to this direct injury to the kidney or to the injury from the back pressure. Stone formation would also be favored by such direct renal injury.

Other factors commonly considered in the etiology of urinary calculus are defects of metabolism, as found in sufferers from gout, and in the rare subjects of xanthinuria and cystinuria, errors of diet, water containing an excess of calcium salts, a deficient intake of plain water, climatic conditions (it is probable that parasitic infections play an important role in the hot lowlands of the Orient) and traumatic injury. Whatever the quantitative or qualitative changes in the colloids and inorganic elements of the urine leading to the formation of crystalloids, it seems reasonable to suppose that stasis of the urinary stream may be a most potent factor in the abnormal fusion of such crystalloids and in their retention as nuclei for larger stones. An analogy is found in the frequent occurrence of bladder calculi in males of advanced age where urethral and prostatic obstructions are probably the chief factors.

If Hunner's claim that most ureteral and renal calculi are associated with ureteral stricture is eventually proven to be true, then theory will play an important part in therapeusis, and the following important therapeutic conclusions are justified:

The occurrence of ureteral and renal calculi may be greatly lessened by the early recognition and proper treatment of ureteral stricture, including the eradication of areas of focal infection.

The treatment of ureteral stone is largely a problem of dilating the channel around, and especially below, the stone sufficiently to allow its dislodgement and passage into the bladder. If the size or shape of the stone necessitates surgical interference, care should be used at the operation to dilate not only the stricture above which the stone lies, but other infiltration areas above or below it. A systematic after-treatment may be necessary to insure the permanency of an adequate channel. It is imperative also in kidney stone that a fluoroscopic examination or x-ray plates be made at operation before the incision is closed to determine positively whether or not all of the particles of stone have been removed.

One should never operate for a stone in the kidney until adequate ureteral drainage has been established from below. In an emergency procedure for removal of a renal calculus, the ureter should be dilated from the kidney to the bladder at the time of operation.

Ureteral stricture is bilateral in most instances, and hence the preparation for operation upon a unilateral kidney stone should include the preliminary dilatation of both ureters. This places the patient in far better condition for the operation and lessens the likelihood of stone formation in either kidney after the operation.

In patients who have had one or more operations for stone in one or both kidneys, and again present themselves with recurring stone, the problem is often one of establishing good ureteral drainage rather than one of further operation.

In the aged and in those with advanced destruction of both kidneys by stone the

problem is often merely that of establishing good drainage by bilateral ureteral dilatation.

With numerous exceptions depending upon the size and position of the stone, it is probable that in the future the problem of urinary calculus will be considered as one primarily of drainage, realizing that the ureteral stricture with its resultant stasis is more injurious to the kidney than the mere presence of a non-blocking stone.

DR. WILLIAM D. HAGGARD, PRESIDENT-ELECT OF THE A. M. A.

At the Chicago meeting of the American Medical Association in June, Dr. William David Haggard, of Nashville, Tenn., was made President-Elect. This honor falls to one of the best known members of the Southern Medical Association.

Through his contact with the profession as Professor of Surgery at Vanderbilt University, through his extensive practice, and through his writings, Dr. Haggard has exerted a wide and beneficial influence upon the surgery of the South. He served with distinction in the World War on both sides of the Atlantic, rose to the rank of Lieutenant Colonel in the Medical Corps, and was a member of the Advisory Board of the Surgeon-General's Office.

For ten years, from 1910 to 1920, Dr. Haggard was a member of the Council on Medical Education of the American Medical Association and in 1917 he was Chairman of the Section on Surgery. He is a member of the American College of Surgeons. In the South he is best known for his connection with the most select surgical organization in the world, namely, the Southern Surgical Association, which he served as Secretary for thirteen years, and as President in 1917.

WILLIAM D. HAGGARD, M.D., F.A.C.S.,
Nashville, Tenn.,
President-Elect, American Medical Association.

Dr. Haggard is in every way worthy of the high honor which has been bestowed upon him and will be a credit to the South and to the Nation. He is easily one of America's foremost surgeons and is a man whose exceptional ability and dominating personality at all times command respect.

SEE NEW ORLEANS WITH SANDY

Members of the Association are no doubt already thinking of New Orleans, November 24-27, the place and the time for the next Southern Medical Association meeting. In addition to its wonderful hospitals and clinical facilities and its great medical school, things that interest the scientific side of a physician's life, there is much of romance and much to stir one's patriotism in that great city.

In this issue, immediately following this editorial, begins a series of four very

short articles entitled "Sandy Sees New Orleans." It gives a charming glimpse of the romance of old New Orleans. And one should not miss the others which will follow editorials in the next three issues of the JOURNAL. Sandy has seen New Orleans at its best and at its worst. He is a physician, too, and so it will be interesting to visualize it with him in this series and then go to New Orleans in November and see it as Sandy has been picturing it.

New Orleans, "The Crescent City," awaits with keenest pleasure the coming of the Southern Medical Association.

Our Convention City

SANDY SEES NEW ORLEANS

I.

ROMANCE

The fragrance of jasmin and magnolia fills the air. The moss, festooned from the branches of the old oak trees, swings lazily in the breeze, which ripples the surface of the bayou. Romance beckons; hearken to the call! Hie you to the Vieux Carre, the center of the French Quarter where Bienville, in 1718, founded New Orleans, establishing the seat of government there in 1822.

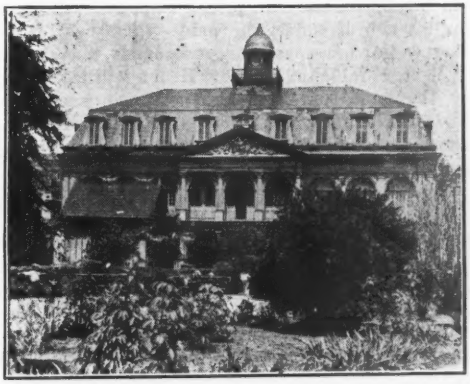
But mark you, visit not with the curiosity of the barbarian; enter rather as the devotee to the shrine of Romance. As you would gaze with narrowed lids upon a masterpiece to gain a hazy perspective, so visit the temple of a gone but not forgotten past. See it not as it is today, although it is still redolent of its past, but people it with courtiers in buckled slippers and silken hose, hurrying slaves, and lackeyed coaches, reigned over and honored by the loveliest product of its time, the Creole lady, born an aristocrat, nurtured a lady.

Which place shall we visit—the Cathedral, the Cabildo, the Pontalba Buildings, Jackson Square, the Napoleon House, the Absinthe House, the hundreds of courtyards, or the French Market and multitudinous places too numerous to mention?

Why select any particular place in this area which time has mellowed and memory hallowed? Better would it be to steep ourselves in its atmosphere and ramble aimlessly into any of these memories of the past, the Napoleon House built to receive Napoleon Bonaparte, then a prisoner at St. Helena; the Cathedral built by Don Almonaster y Roxas; the Jackson Square, the old Place d'Armes, where society met in the evenings and where troops were mustered; the Cabildo, built by Don Almonaster over the site of the first prison and guard house in New Orleans. You may stray into any place, and if the gods smile upon you and lift from your mind's eye the veil of today, wipe out the squalor that age has written over some of these treasures of the past, you will feel and live in an age of chivalry and romance.

Note the old Jackson Square with its equestrian figure of General Jackson, the verdant flower beds, its stone walks and black iron fence. Time has passed its softening hand over this old Place d'Armes, and during its more than two hundred years has smiled and frowned, and smiled again, leaving with every changing mood an altered front.

Here was the cradle of New Orleans, her pioneers dug, entrenched and homed around it. They constructed their moats and ramparts here to repel the encroaching Indians. Here the troops were marshalled and the people gathered in their daily life. Here coquetry, romance, chivalry, love and hatred held sway while New Orleans grew



The Cabildo

into swaddling clothes. Here Louisiana changed allegiance from France to Spain, then from Spain to France, and finally from France to the United States. The influence of these changes is nowhere more patent and visible than in this lace and lavendar chest of memory, bounded by the old Cathedral, the Cabildo, the Arsenal, the Pontalba Buildings and the Mississippi River.

The Pontalba Buildings typify the Spanish Grandee's opulence brought to its highest pitch in the old Cathedral of Don Almonaster. Travel here with veneration as you are entering the

portals of human love and loyalty, love and loyalty which give, and give to their adopted land. When you have grasped this spirit, peer into this realm. Here is the old Cabildo, on the south side of the Cathedral erected, in 1795, by Don Almonaster y Roxas, on the site of the former guard house and prison. Go into the sala capitular, which is the large room on the second floor, and you will find today the same floors put down by the artisans of the Eighteenth Century. Our late war has freshened in our memories the name of Lafayette. The boards which are now beneath your feet were once trod by this same hero. Our debt to France, which we so gallantly paid during the late war with the bodies and blood of our sons, finds mute evidence in the echo of our tread. This old building with its thick walls and Spanish windows housed the first Protestant church in Louisiana. It has served as City Hall, Supreme Court, and even temporarily as a fortress. It has been the mother of New Orleans during its growth to maturity. Do you wonder that it is hallowed?

Ramble through the Square; go into the Cathedral; stop in the old French Market, where the Indian squaws once sold herbs, sassafras, and gumbo file; where the artisan, yea, the lawyer, the physician and the priest stopped each day for his cup of coffee, the coffee which has made New Orleans famous. As you ramble, the shade of George Cable or Lafcadio Hearn will take you by the hand and with the necromancy of the Swami will project you into a mental world the memories of which will live with you ever afterward.

The shades of night are suddenly heralded by a flare of light. Gone in a twinkling are the host of wondrous folks. You look in vain for the sparkling eye and the flashing sword. The city's electric current, in assuming its function of making light the night, has broken the spell. What an anachronism!

We stroll along. Up Chartres Street we roam through the wholesale district, flashes of memory calling us back with promises of more domains to be explored. Heedlessly feet speed on while memory revels in nebulous fancy. What manner of man was Lafitte? Who was Bras Coupe? Where did Iberville .....?

Noises, life, activity, automobile horns, show windows, Canal Street teeming with life of today, and as we dodge a taxi, whose chauffeur bemoans his luck at having missed us, we feel with Francois Villon "Where are the snows of yesteryear?"

SANDY.

(To be continued)

Correspondence

BABIES BORN WITH TEETH

Editor, SOUTHERN MEDICAL JOURNAL:

I have just received the June number of the JOURNAL and note the case reported by Dr. C. L. Horton of a baby born with six teeth.

In August, 1919, I delivered a white woman, age 23, of an eight-pound male baby that had four upper and four lower incisors. They were well formed, with the enamel producing the familiar sound of snapping when the lower jaw was brought up with a little force.

The baby had congenital amputation of the left arm midway between the elbow and shoulder and also of the right leg midway between the knee and hip. It was still-born at term.

Haller, of England, some time ago collected nineteen cases of babies born with teeth. Some of the ancient celebrities of Europe are supposed to have been born with teeth. Louis XIV is accredited with having had two teeth at birth. Bigot, a physician of the Sixteenth Century; Boyd, the poet; Valerian; Richard III; and many others, are reported by different authors from time to time as having had antenatal development of teeth.

J. S. LYONS, M.D.

Rogersville, Tenn.,
June 3, 1924.

MEDICAL WORK AMONG THE LEPERS

Editor, SOUTHERN MEDICAL JOURNAL:

Last week I went to the Fusan Leper Colony, which is under the Rev. J. N. Mackenzie's care, and operated upon a few of the lepers and examined the three hundred and seventy-five cases. I was pleased to see that they had made very marked progress from treatment. We discharged forty cases in whom the disease had been arrested. We cannot say as yet whether or not the chaulmoogra oil and ethel esters have produced a permanent cure, though they have a most beneficial effect.

A little boy was placed upon the operating table for his leg to be amputated. All the instruments they had for this amputation at the thigh were five pairs of hemostats, a small bistoury and a pair of "tooth pullers." We might have pulled his leg with these forceps, but we wanted to take it off. I left my leper physician to operate upon twenty cases, many of them amputations, and the above named were the only instruments he had for this work.

We have trained a group of lepers to do their own medical work, dressings, operations and treatments, but we are very short of instruments and supplies at both our plants. Will you look about your office and see if you can spare a few instruments or supplies to help out in this needy place? Any instruments, drugs, dressings or supplies will be put to good use here. Here are some of the needs: artery forceps, amputating

saws, knives or bistouries of any kind, good operating scissors, bone curets, stethoscopes, thermometers, chloroform masks, operating knives, cataract knives, retractors, dressing forceps, dissecting forceps, any kind of surgical needles, hypodermic syringes and needles, hypodermic syringe for oil use, trochars, eye specula, entropion forceps, chalazion forceps, eye scissors, instruments of any kind for eye work, mouth gags, dental forceps and scalers, tooth syringes, long probes, long dressing forceps and microscope with oil immersion lens. Any of the more common operatin instruments can be used; also gauze, cotton, bandages, etc. At Fusan they were using old newspapers as a dressing, which of course is very bad. The lepers would appreciate pieces of cloth even as small as two inches square. Old sheets or any kind of white cloth is very useful to them.

Besides the five hundred and seventy-five lepers here at Kwangju, I am supervising the medical treatment at Fusan; and if you can send any of these articles to me I shall divide them between the two plants.

Two years ago we discharged ten "cures;" and not one of these has had a return of the disease to date. Chaulmoogra oil has a most beneficial effect upon this dreaded disease.

Wrap any of the above supplies in some old clothing; send it out by parcel post; mark the package "Gift to Lepers," and it will come duty free. We need your help in treating these nine hundred and fifty cases.

Most of our money must go into the actual necessities such as food and clothing. Therefore, money for drugs is usually short.

If any physicians care to be on our mailing list, send the addresses. Fraternally yours,

R. M. WILSON, M.D.

Kwangju, Korea, Asia,
March 11, 1924.

[Editor's Note: Many of those who attended the Chattanooga meeting (1922) of the Southern Medical Association will remember having met Dr. Wilson. In addition to presenting a paper on the "Treatment of Leprosy" in the Section on Dermatology and Syphilology, he showed some interesting slides of medical work in Korea to several of the sections. Dr. Wilson is a Southerner, his home being in Arkansas, and is in charge of the Ellen Lavine Graham Hospital and the Kwangju Leper Home, at Kwangju, Korea, under the care of the Southern Presbyterian Church. This letter should prove interesting to the county medical societies, and it is to be hoped that some one will read it to each county society.]

Book Reviews

Diseases of the Skin. By Frank Crozier Knowles, M.D., Professor of Dermatology, Jefferson Medical College. Second Edition, thoroughly revised, with 229 illustrations and 14 plates. Philadelphia: Lea & Febiger, 1923.

Knowles has not produced a book above the average. Even many of the illustrations have been borrowed from other texts. The colored plates are very poor.

It is exceptional that a volume of this moderate size includes any considerable description of so many rare diseases. This feature and the excellent chapter on syphilis recommend it, as well as the author's bent for giving his favorite prescriptions prominent place.

Physical Examination and Diagnostic Anatomy. By Charles B. Slade, M.D., Chief of Clinic in General Medicine and Instructor in Physical Diagnosis, University and Bellevue Hospital Medical College, New York, 1907-1914; Visiting Physician, Otisville Sanitarium; Medical Examiner, New York City Department of Health. Third Edition, thoroughly revised, with 43 text figures and 179 pages. Philadelphia and London: W. B. Saunders Co., 1923. Cloth, $2.00.

The book is written as an introduction to physical diagnosis. The average medical student would find very little use for such a work because of the elementary manner in which it is presented.

Haematology In General Practice. By A. Knyvett Gordon, M.B., B.C., B.A., Cantb. Medical Superintendent of the Virol Pathological Research Laboratories; Formerly Entrance Exhibitioner, Undergraduate Exhibitioner and Glyn Prizeman, King's College Cantb.; University Scholar and Demonstrator of Pathology, St. Mary's Hospital; Lecturer on Infectious Diseases, University of Manchester, and Medical Superintendent, Manchester City Hospital. Illustrated with 3 plates, 1 colored, and 5 text figures. 100 pages. New York: William Wood & Co., 1923. Cloth, $1.75.

The book presents this subject in the most elementary manner. It is more in the nature of a text book for nurses than for physicians.

A Combined Text-book of Obstetrics and Gynaecology. By J. M. Munro Kerr, M. D., F. R. F. P. and S. (Glas.), Professor of Obstetrics and Gynaecology, Glasgow University (Muirhead Chair); Obstetric Physician, Glasgow Royal Maternity and Women's Hospital; Gynaecological Surgeon, Glasgow Royal Maternity and Women's Hospital; Gynaecological Surgeon, Glasgow Royal Infirmary; etc., and James Haig Ferguson, M. D., F. R. C. S. (Edin.) Gynaecologist, Royal Infirmary, Edinburgh; Obstetric Physician, Royal Maternity Hospital, Edinburgh; Lecturer in Clinical Gynaecology and in Clinical Obstetrics, University of Edinburgh; Consulting Gynaecologist, Leith Hospital; Examiner in Midwifery and Gynaecology, Royal College of Physicians and Royal College of Surgeons, Edinburgh, etc., and James Young, D. S. O., M. D., F. R. C. S. (Edin.), Assistant Physician, Royal Maternity Hospital, Edinburgh; Assistant Gynaecologist, Royal Infirmary, Edinburgh; Lecturer in Clinical Gynaecology and Clinical Obstetrics, University of Edinburgh: Examiner for the Fellowship of the Royal College of Surgeons, Edinburgh, and for the Central Midwives' Board of Scotland; etc., and James Hendry, M. A., B. Sc., M. B., Senior Assistant to the Muirhead Professor, University of Glasgow; Assistant Physician, Royal Maternity and Women's Hospital; Gynaecologist to Out-Patients, Royal Infirmary Glasgow; Examiner Central Midwives' Board, Scotland, etc., with 1006 pages, illustrated. New York: Wm. Wood & Co., 1923. Cloth, $10.00.

The English viewpoint is always of interest to American practitioners, and this volume is a very able resume of it. Considerable ground is covered, even a chapter on infant feeding being introduced. Rather more space is devoted to anatomy, obstetrics, infant feeding, etc., than to gynaecology. It considers gynaecological diseases the result of infections and injuries contracted in parturition, and for this reason attempts to bring obstetrics and gynaecology more closely together, to prevent the necessity for much gynaecological work. The illustrations of anatomy are good, and there are detailed directions regarding the use of forceps and version.

Problems In Tuberculosis. By Sir James Kingston Fowler, K. C. V. I., C. M. G., M. A., M. D., D. Sc. (Hon.), F. R. C. P. Consulting Physician and Emeritus Lecturer on Medicine, Middlesex Hospital, etc. 68 pages. London: Henry Frowde & Hodder & Stoughton, 1924.

This little book deals with the problems of tuberculosis in a rather different way from most books along this line. There are many terse epigrams which the author has introduced, and which are only too true. It really deals with tuberculosis from a public health standpoint and from the standpoint of an executive in charge of tuberculosis work, and to those engaged in this branch of the tuberculosis problem the book will be most useful and will be found to be well worth a close study.

Social Control of the Feebleminded. A Study of Social Programs and Attitudes in Relation to the Problems of

Mental Deficiency. By Stanley P. Davies, Ph. D., Executive Secretary, Committee on Mental Hygiene, N. Y. State Charities Aid Association, New York: The National Committee for Mental Hygiene, Inc. Price, $1.25.

The writer discusses this problem under twelve headings, first taking up the problem as related to the individual and the community. Next follows a description of the earlier methods of treatment and the period of physiological education. He then considers the earlier conceptions of heredity and the prevalence of feeblemindedness. In his chapter entitled "Social Indictment of the Feebleminded," he considers in detail the importance of this class of patient to the community and its responsibility.

In a chapter entitled "The Alarmist Stage," he takes up the question of methods that were advised for handling this condition and laws that were passed which proved in most cases, ineffective.

The chapter which he calls "Newer Aspects of Heredity and Behavior" shows how former conceptions of feeblemindedness were incorrect, and serves as an introduction to the modern conception regulating these individuals.

The chapters on "Social Reconstruction at Waverly," "The Colony Plan," "Rome Colonies for Boys and Rome Colonies for Girls," show constructive work that is being done in order to make these individuals self-supporting at least in part, and are well presented.

The chapter devoted to "The Public School and the Backward Child" is filled with very pertinent and important observations and deductions.

The remaining chapters, "The Socializing Process," and "The Feebleminded in the Social Order," serve as models for constructive criticism and suggest methods of advancement in the betterment of the social condition of the feebleminded.

The book is carefully written, shows close study, and a broad grasp of the subject.

Medical and Sanitary Inspection of Schools. For the Health Officer, the Physician, the Nurse and the Teacher. By S. W. Newmayer, A. B., M. D., formerly Chief of Division of Child Hygiene; Assistant Chief Medical Inspector, Bureau of Health; Supervisor of School Medical Inspection, Philadelphia. With 462 pages. Illustrated with 79 engravings and 6 full-page plates. Philadelphia and New York: Lea and Febiger, 1924. Cloth, $4.00.

The author divides his subjects into eight headings: Administration; the School Building and Grounds; Physical Defects; the Health of Teachers; Mentality, and Allied Subjects of School Medical Supervision. Each of these subdivisions is presented in a practical manner.

This book should prove of value not only to the school inspector, school nurse and teacher, but to all members of the medical profession who are interested in schools. And who of us is not? The book can be read with profit also by the parents of the children. The fact that it has passed into a second edition speaks for its deserved popularity.

Epitome of Blood Pressure. Aids in the Interpretation of Blood Pressures for the General Practitioner with Key to Diagnosis. By Burton Baker Grover, M. D., Author of "Handbook of Electrotherapy" and "High Frequency Practice;" President of the Western Electrotherapeutic Association, 1919-1921; President of the Western School of Physiotherapy; Fellow of the American Electrotherapeutic Association; Vice-President of the American College of Radiology and Physiotherapy. Interleaved for convenience of making notes. Kansas City: The Electron Press. Price, with "Key," $3.00.

This book is written with the idea of presenting the subject of blood pressure in an elementary and practical manner. There is little that is original and many of the directions and deductions are not in accord with modern medical teaching. Although blood pressure has a great practical importance, diagnosing conditions of the cardiovascular system from the data which the author derives from blood pressure determinations, seems unjustifiable. It is hard to see how this book can fulfill any useful purpose.

The Anatomy and Physiology of the Male Body. By Hubert E. J. Biss, M.A., M.D. Cantab, D.P.H. Third edition. New York: Wm. Wood and Company. Price, $2.00 net.

Consisting of two sections, the first contains a concise outline of the physiology of the body, and a description of the anatomy. The second portion consists of charts and drawings demonstrating the bones, muscles, nerves and special organs. It will be found useful in classes for nurses or high school students studying anatomy and physiology. It is a well arranged and accurate work.

The Treatment of the Common Disorders of Digestion. By John L. Kantor, Ph.D., M.D., Chief in Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University; Associate Gastroenterologist and Association Roentgenologist, Montefiore Hospital for Chronic Diseases, New York City. Illustrated. Two hundred and forty-five pages. St. Louis: C. V. Mosby Company, 1924. Cloth, $4.75.

All new books are interesting to review in order to justify their existence. This little manual, appearing in its first edition, passes the test, and is given a cordial welcome. It is a practical guide for the treatment of those forms of digestive disorders most commonly met with in the practice of medicine. The principles and objectives of treatment are clearly stated. It contains excellent chapters on general management of functional digestive disorders, ptosis and the asthenic state, gastric and duodenal ulcers, treatment of constipation, achylia gastrica, gall bladder disorders and diarrheas. There is a good chapter on the treatment of headaches associated with indigestion. The subject of constipation is well illustrated with many x-ray pictures. This new work is worth while and should be available for the general practitioner as well as the specialist on gastro-intestinal diseases.

Management of Diabetes. Treatment by Dietary Regulation and by the Use of Insulin. By George A. Herrop, Jr., M.D., Associate in Medicine, College of Physicians and Surgeons, Columbia University, and Assistant Visiting Physician, Presbyterian Hospital, N. Y. 190 pages. New York: Paul B. Hoeber, 1924. Extra cloth, $2.00 net.

This short manual is based upon the course of instruction on insulin and diabetes given under the John D. Rockefeller, Jr., grant, by the Presbyterian Hospital, New York. It is brief, intensely practical, presenting the fundamentals of metabolism and its derangement in diabetes, the physiological effects of insulin, the general principles of the management of diabetes, dietary regulation and insulin. It gives in detail the methods of treating acidosis, coma, and complications of diabetes. Diet is essential in management of diabetes, and this is the great problem with the general practitioner. This book gives tables and diet lists that will be found very helpful. The concluding chapters on methods of blood and urine analyses are essential and are used routinely in the management of diabetes. It is a splendid and useful book.

Handbook of Modern Treatment and Medical Formulary. A Condensed and Comprehensive Manual of Practical Formulas and General Remedial Measures. Compiled by W. B. Campbell, M.D., Formerly Resident Physician at the Methodist Episcopal Hospital, Philadelphia. Six hundred and ninety-three pages. Philadelphia: F. A. Davis Company, 1924. Cloth, $5.00 net.

This is obviously a compilation. There are many formulas retained which would be counted obsolete in modern therapeutics. The book is written so as to treat symptoms, which is not in keeping with modern medical teaching. There is too much poly-pharmacy in most of the prescriptions; and it is a book for which the average physician, who writes his own prescriptions, would find little use.

Diseases of Middle Life. The Prevention, Recognition and Treatment of the Morbid Processes of Special Significance in This Critical Life Period. Edited by Frank A. Craig, M.D., Associate Director of the Clinical and Sociological Department of the Henry Phipps Institute of the University of Pennsylvania. Volume I, illustrated, 920 pages. Volume II, illustrated, 951 pages. Philadelphia: F. A. Davis Company, 1924. Cloth, $15.00 per set.

The purpose of this work is to direct the physician's attention to disease processes in middle life and the time at which they may be treated with the hope of their removal. The different systems are covered by selected authors, who, in the main, have done their work satisfactorily.

It seems strange in the article on "Diabetes," by Moh-

ler, that there is no mention of the quantitative estimation of sugar in the urine. The section allotted to the treatment of syphilis by Drs. Thomas and Harrison—"Diseases of the Male Genito-Urinary Tract"—does not give sufficient detail to make the book applicable to the use of the general practitioner.

Sailer's section on "Diseases of the Blood' is too sketchy to be of much value. This is a real disappointment, for the author is quite familiar with his subject.

Despite these defects the book should serve a useful purpose through its many helpful features.

Differential Diagnosis. Presented Through an Analysis of 317 Cases. By Richard C. Cabot, M.D., Professor of Medicine and Professor of Social Ethics, Harvard University, Volume II, Third Edition, Revised. Octavo of 709 pages, 254 illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Cloth, $9.00 net.

The fact that Cabot's book has passed into the third edition indicates its popularity with the medical profession. Dr. Cabot has retained the same cases as in the previous edition but has enlarged and modified the introductory discussions. Throughout the book the deductions drawn from the cases are logical and instructive. It is a valuable addition to any medical library.

The Insulin Treatment of Diabetes Mellitus. By P. J. Cammidge, M.D. (Lond.), D.P.H. (Camb.) 172 pages. New York: Wm. Wood & Co., 1924. Price, $2.00.

This little volume is one of many recent books on the subject of diabetes that have appeared since the discovery of insulin. It gives the history of the discovery of insulin, and the result of experimental investigation and the nature and clinical effects of insulin. The author states his own experience with insulin in treating diabetes, and his methods conform closely with the methods used in the United States. There are chapters on glycosurias and their significance, and outline of the usual laboratory procedures necessary in treating diabetes.

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. New York: Wm. Wood & Co., 1924. Cloth, $5.00.

Considering the number of medical publications through which contributions are scattered it is of real value to the physician to have the important papers epitomized.

The editors have picked their contributors with care and each has covered his assigned field in an able manner.

There has been a selection from the important literature without regard to geographic limitations.

Each article is followed by references which make it possible to study the original if desired.

The book should prove a valuable addition to any library.

Hospital Organization and Operation. By Frank E. Chapman, Director Mount Sinai Hospital of Cleveland. Illustrated. 250 pages. New York: The Macmillan Company, 1924.

The book is of value to all hospital administrators' and the plea for conducting a hospital from the administrative point of view on the same plan as an industrial organization, is one to be commended. Also, the suggestion that hospital administration be standardized as much as possible, is practical.

First Steps in Organizing a Hospital. An Exposition of Ideals and Principles Incident to the Inception and Organization of a Hospital. By Joseph J. Weber, M.A., Editor, The Modern Hospital. Formerly Executive Secretary, Committee on Hospitals, State Charities Aid Association of New York; Association Director, Boston Dispensary. New York: The Macmillan Company, 1924.

The study of a book of this character will prove of great advantage to all those interested in hospital organization. Not only superintendents and members of the medical profession will gain by its study but laymen who are interested in the organization and functioning of a modern hospital.

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Southern Medical News

NEW YORK POST-GRADUATE SCHOLARSHIPS

Scholarships on the Oliver-Rea Foundation for graduate study in Medicine are available at the New York Post-Graduate Medical School and Hospital. Inquiries should be addressed to the Dean, 301 East 20th Street, New York, N. Y.

ALABAMA

Contracts have been awarded for the construction of the tuberculosis sanatorium, Birmingham, for which Birmingham and Jefferson County recently subscribed $200,000. It is an 83-acre site on the Montgomery Highway. The City and the Board of Revenue have each pledged $20,000 a year for maintenance of the sanatorium.

Dr. Byron S. Bruce, Opelika, succeeds Dr. William Gewin, Birmingham, as President of the Alabama State Hospital Association.

Dr. R. B. Williams, Athens, has been appointed full-time Health Officer of Marshall County.

Deaths

Dr. John Sharp Gillespy, Birmingham, aged 65, died May 8 from cerebral hemorrhage.

Dr. Davis Elmore Cason, Odenville, aged 89, died May 11.

Dr. George Dennis Paschal, Hurtsboro, aged 77, died April 22 at a hospital in Tuscaloosa, from senility.

Dr. Robert Allen White, Fairfield, aged 41, died April 15 from pneumonia.

Dr. A. L. Hendon, Holly Grove, aged 74, died May 6 following a long illness.

ARKANSAS

At the recent annual meeting of the Arkansas State Medical Association held in Fayetteville, Dr. Herbert Moulton, Fort Smith, was elected President; Drs. Harvey D. Wood, Fayetteville, Simeon J. Hesterly, Prescott, and Lorenzo T. Evans, Batesville, Vice-Presidents; Dr. William R. Bathurst, Little Rock, Secretary; Dr. Robert L. Saxon, Little Rock, Treasurer. The next meeting will be held in Little Rock.

The week of June 2-7 was Alumni Week for the University of Arkansas Medical Department, which was held in Little Rock.

Dr. John Thames, with the Health Department in Little Rock, has gone to Kingwood, West Va., to take up county health work under the State Health Department cooperating with the U. S. Public Health Service.

The new General Hospital, recently completed at Little Rock, has been formally opened to the public.

The Pettus Infirmary, Little Rock, has been remodeled.

Plans are under way for the erection of a modern six-story office building in Little Rock for the exclusive use of physicians and dentists.

Deaths

Dr. Jean Allen Lightfoot, Texarkana, aged 62, died May 7 from cerebral hemorrhage.

Dr. William Duncan Dierks, aged 55, died April 17 from cerebral hemorrhage.

Dr. J. C. Jamison, Gillham, aged 64, died April 22.

DISTRICT OF COLUMBIA

A committee consisting of Drs. Edgar P. Copeland, Frank Leech, Henry C. Macatee, Luther H. Reichelderfer and John D. Thomas has been appointed to prepare a new medical practice act for presentation to Congress in the fall.

At the annual meeting of the National Academy of Sciences in Washington April 28, the new building of the National Academy and the National Research Council was dedicated.

A hospital social service school is to be established at Georgetown Hospital, Washington, by the National Catholic Service School, conducted by the National Council of Catholic Women. The school will be opened in September.

Approximately 600 physicians of Philadelphia made a trip to Washington May 15 to celebrate the thirty-third anniversary of the Philadelphia Medical Club. President Coolidge received the members on the White House lawn.

(Continued on page 34)

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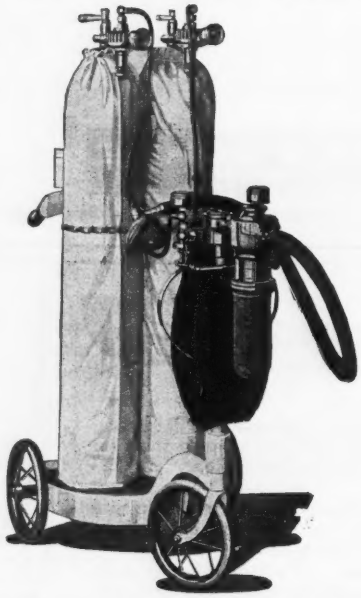

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(Continued from page 548)

Dr. Llewellin Eliot, Washington, one of the oldest living graduates of Georgetown University School of Medicine, celebrated his fiftieth year of active practice in May. The medical faculty of the Georgetown University School of Medicine presented him with a loving cup.

Mr. James R. Mays, former Superintendent, Garfield Hospital, Washington, has been appointed Superintendent of the Union Hospital, Fall River, Mass.

More than 100 cases of smallpox have been reported in Washington. The Health Department has requested Congress to give funds to employ additional physicians to stop the epidemic.

Dr. S. S. Goldwater, Director, Mt. Sinai Hospital, New York, N. Y., has been appointed hospital consultant to the Government of the District of Columbia.

The annual campaign for the prevention and cure of cancer was held in Washington March 15-April 15 under the auspices of the American Society for the Control of Cancer and the "Committee of 100."

Dr. George W. McCoy, Surgeon, U. S. Public Health Service, has been appointed consultant to represent the United States on the Permanent Standards Committee for the Standardization of Sera and Serologic Tests.

The Washington Psycho-Analytical Society was organized April 11. Membership is restricted to physicians, who, to be admitted, must present a thesis containing the history of one case successfully analyzed by the applicant. It is also required that before an applicant may be considered for admittance he must present evidence of having been successfully analyzed. The officers of the Society are Dr. William A. White, President; Dr. Joseph C. Thompson, Vice-President; Dr. Lucille Dooley, Secretary-Treasurer. Other charter members are Drs. Philip S. Craven, Louis D. Hubbard and Benjamin Karpman.

At a recent meeting of the Council of Social Agencies alienists of the District urged the need for an adequate mental hygiene program in the District. It is planned to make a survey preparatory to the establishment of a central mental hygiene clinic.

Instructions have been issued to the construction agencies of the U. S. Veterans' Bureau, Washington, to equip all government hospitals for radio reception with connections direct to the beds of the patients. Civic groups and friends of the World War veterans will be depended upon to complete the plan because no funds are available for installing the head phones.

Deaths

Dr. Dunnleigh Corey, Lieut., M. C., U. S. Navy, Washington, aged 34, died April 28 at the U. S. Naval Hospital.

Dr. Harold Lucian Palmer, Washington, aged 59, died April 26.

FLORIDA

At the annual meeting of the Florida Medical Association held in Orlando, May 13-14, Dr. John C. Vinson, Tampa, was elected President; Drs. John S. McEwan, Orlando, Louis S. Oppenheimer, Tampa, and Lawrence Ingram, Orlando, Vice-Presidents; Dr. Graham E. Henson, Jacksonville, Secretary, re-elected. The next meeting will be held in St. Petersburg.

Leonidas M. Anderson, Lake City, has been appointed a member of the State Board of Medical Examiners, to succeed the late Dr. James M. Jackson.

Deaths

Dr. William H. Harrison, Cottondale, age 65, died April 22.

GEORGIA

At the annual meeting of the Medical Association of Georgia, in Augusta, May 7-9, the following officers were elected: Dr. John O. Elrod, Forsyth, President; Drs. W. A. Mulherin, Augusta, and Bertram H. Wagnon, Atlanta, Vice-Presidents; Dr. Allen H. Bunce, Atlanta, re-elected Secretary.

Baldwin County Medical Society has elected Dr. Richard Binion, Milledgeville, President; Dr. Y. H. Yarbrough, Milledgeville, Vice-President; Dr. H. D. Allen, Jr., Milledgeville, Secretary-Treasurer.

Blue Ridge County Medical Society has elected Dr. J. M. Daves, Blue Ridge, President; Dr. C. C. Russell, Mineral Bluff, Vice President; Dr. C. B. Crawford, Blue Ridge, Secretary-Treasurer.

Brooks County Medical Society has elected Dr. J. R. McMichael, Quitman, President; Dr. L. A. Felder, Quitman, Secretary-Treasurer.

(Continued on page 36)

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(Continued from page 34)

Butts County Medical Society has elected Dr. W. H. Steele, Jackson, President; Dr. J. W. Harper, Jenkinsburg, Vice-President; Dr. J. Lee Byron, Jackson, Secretary-Treasurer.

Coffee County Medical Society has elected Dr. J. R. Smith, Douglas, President; Dr. D. H. Meeks, Nicholls, Vice-President; Dr. T. H. Clark, Douglas, Secretary-Treasurer.

Crisp County Medical Society has elected Dr. L. E. Williams, Cordele, President; Dr. M. R. Smith, Cordele, Vice-President; Dr. Byron Daniel, Cordele, Secretary-Treasurer.

DeKalb County Medical Society has elected Dr. C. E. Patillo, Decatur, President; Dr. Mary F. Sweet, Decatur, Vice-President; Dr. J. F. Pitman, Decatur, Secretary-Treasurer.

Dougherty County Medical Society has elected Dr. A. W. Wood, Albany, President; Dr. N. E. Benson, Albany, Vice-President; Dr. W. S. Cook, Albany, Secretary-Treasurer.

Emanuel County Medical Society has elected Dr. D. D. Smith, Swainsboro, President; Dr. W. H. Lucas, Stillmore, Vice-President; Dr. S. S. Youmans, Oak Park, Secretary-Treasurer.

Franklin County Medical Society has elected Dr. Stewart D. Brown, Royston, President; Dr. G. T. Ridgway, Royston, Vice-President; Dr. B. T. Smith, Carnesville, Secretary-Treasurer.

Habersham County Medical Society has elected Dr. E. H. Lamb, Demorest, President; Dr. S. A. Boland, Cornelia, Vice-President; Dr. R. B. Lamb, Demorest, Secretary-Treasurer.

Hall County Medical Society has elected Dr. Bradley B. Davis, Gainesville, President; Dr. R. L. Rogers, Gainesville, Vice-President; Dr. Pratt Cheek, Gainesville, Secretary-Treasurer.

Jackson County Medical Society has elected Dr. F. M. Hubbard, Commerce, President; Dr. S. J. Smith, Jefferson, Vice-President; Dr. J. C. Bennett, Jefferson, Secretary-Treasurer.

Jenkins County Medical Society has elected Dr. M. E. Perkins, Millen, President; Dr. C. T. Thompson, Millen, Secretary-Treasurer.

Jones County Medical Society has elected Dr. J. H. Riley, Haddock, President; Dr. B. L. White, Round Oak, Vice-President; Dr. P. R. Chambliss, Gray, Secretary-Treasurer.

Pike County Medical Society has elected Dr. J. C. Beauchamp, Williamson, President; Dr. D. L. Head, Zebulon, Vice-President; Dr. M. M. Head, Zebulon, Secretary-Treasurer.

Stephens County Medical Society has elected Dr. John H. Terrell, Toccoa, President; Dr. W. R. King, Toccoa, Vice-President; Dr. C. L. Ayers, Toccoa, Secretary-Treasurer.

Terrell County Medical Society has elected Dr. J. G. Dean, Dawson, President; Dr. R. R. Holt, Parrott, Vice-President; Dr. Steve P. Kenyon, Dawson, Secretary-Treasurer.

Tift County Medical Society has elected Dr. W. H. Hendricks, Tifton, President; Dr. George W. Julian, Tifton, Vice-President; Dr. M. P. Sporman, Tifton, Secretary-Treasurer.

Troup County Medical Society has elected Dr. D. E. Morgan, LaGrange, President; Dr. R. M. Avery, Hogansville, Vice-President; Dr. H. H. Hammett, LaGrange, Secretary-Treasurer.

Washington County Medical Society has elected Dr. J. R. Burdette, Tennille, President; Dr. T. E. Vickers, Wrightsville, Vice-President; Dr. N. Overby, Sandersville, Secretary-Treasurer.

Seventh District Medical Society has elected Dr. R. E. Wilson, Cartersville, President; Dr. Trammel Starr, Dalton, Vice-President; Dr. M. M. McCord, Rome, Secretary.

Randolph County Medical Society held a public meeting on May 1 to discuss the subject of malaria.

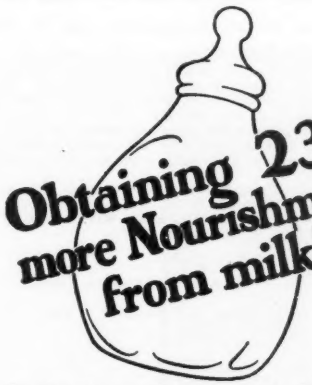
Dr. Samuel A. Anderson, Macon, has been appointed Health Commissioner of Baldwin County to succeed the late Dr. G. L. Chapman.

Dr. E. E. Murphey, Augusta, has been re-elected President of the Board of Health for his fifth term.

The will of Mrs. J. P. Williams, President of the Georgia, Florida and Alabama Railroad, provides for a Memorial Hospital to care exclusively for women and children to be established in some Georgia County. The Hospital will be called Jessie Parker Williams Memorial Hospital in memory of Mrs. Williams' late husband.

Wilkes County Medical Society is formulating plans to take over the Washington General Hospital, Washington, recently completed, and operate it along the most modern lines. The $25,000 which was set aside to cover construc-

(Continued on page 38)



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In the research of the specific uses of granulated gelatine in the dietary, conducted by T. B. Downey, Ph.D.—Fellow at the Mellon Institute, University of Pittsburgh, it was conclusively proved by standard feeding experiments that 1% of pure, plain gelatine dissolved and added to milk, will increase by 23% the nourishment obtainable from that milk.

The reason for this is found in Zsigmondy's determinations that plain granulated gelatine is the most powerful of the protective colloids which, therefore, when added to cow's milk stops the immediate precipitation of the milk casein by the gastric juices, preventing excessive curd formation. In other words, the action of gelatine-ized cow's milk in the infant's stomach is similar to the action of mother's milk.

In infant feeding, this dietary discovery is of inestimable value, especially at this time of year, in the prevention of milk colic, regurgitation, and bowel disorders, and in promoting the complete absorption of the milk nutriment with the minimum of digestive effort.

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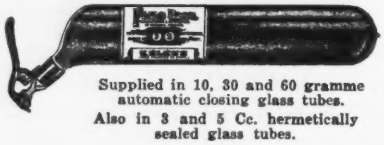

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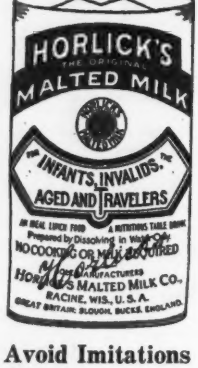

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(Continued from page 36)

tion costs entirely covered all expenses without additional funds.

The American Psychiatric Association met in Atlanta June 3-6.

The Kiwanis Club is equipping and maintaining a free clinic for the children of Metter and Candler County.

The American Child Health Association has included Augusta in the survey to be made to raise child health standards throughout the country.

A committee of three has been appointed by the Georgia Medical Society to cooperate with the charity clinics to try to prevent imposition by people who are able to pay for services.

Dr. Francis Clifford Nesbit, Atlanta, and Mrs. Carolyn Louise Sparling, Charlotte, N. C., were married May 7.

Dr. Albert Fleming and Miss Susie Mizell, both of Folkston, were married April 30.

Deaths

Dr. Charles Blome Patterson, Augusta, aged 57, died April 18.

Dr. John Birch Douglass, Talbotton, aged 64, died April 27.

KENTUCKY

Breathitt County Medical Society has elected Dr. M. E. Hoge, President; Dr. O. H. Swango, Vice-President; Dr. A. H. Davis, Secretary.

Dr. J. E. Wells, Cynthiana, J. W. Kincaid, Catlettsburg, and J. S. Lock, Barbourville, have resigned from the Council of the State Medical Association. These resignations together with the recent death of Dr. W. W. Richmond has caused the largest change in the personnel of the Council since its organization in 1902. Dr. V. A. Stilley, Benton, has been selected councilor for the First District; Dr. F. A. Stine, Newport, for the Eighth District; Dr. A. J. Bryson, Ashland, for the Ninth District; Dr. W. M. Martin, Harlan, for the Eleventh District.

The annual week of Alumni Clinics June 2-7 and the Alumni banquet, Louisville, attracted approximately 250 Louisville graduates. At the banquet, Medical Education a century ago was discussed by President A. D. Harmon, of Transylvania College. The commencement address was delivered by President Frederick Charles Hicks of the University of Cincinnati.

Dr. Haven Emerson, New York, has begun a health and hospital survey of Louisville, under the auspices of the Community Chest. The report will be submitted in the fall to a professional committee representing organized medicine and made up of the State, County and City Health Officers, and Dean of the University of Louisville School of Medicine and the Presidents of the staffs of eight local hospitals.

The University of Louisville Medical Department has received a collection of McMurtry memorabilia about which it hopes to develop a historical museum. A portrait of Dr. McMurtry will be hung in the school library. His entire library, which includes the transactions of the American Gynecological Association and the American Surgical Association and copies of editions of rare publications, has been presented to the University.

A new $125,000 city hospital will be erected at Bowling Green.

Dr. Herman Mahaffey, Louisville, has severed his connection with the Waverly Hill Tuberculosis Hospital. He will be associated with Dr. C. E. Gaupin.

The cornerstone of the new nurses' home for the Speer's Memorial Hospital, Dayton, was laid recently.

Dr. Charles M. Garth has resigned from the United States Public Health Service and will limit his practice to pulmonary diseases at Louisville.

An addition will be erected at the Owensboro City Hospital, Owensboro.

The venereal disease clinic of Paducah, closed more than a year following refusal of the Board of Commissioners to provide funds, was reopened May 1. The Board of Health will provide a monthly sum toward the work, which will be under the supervision of Dr. J. Ernest Fox, City Health Officer.

Of the $10,000 in scholarships awarded to twenty public health workers throughout the Nation by the American Child Health Association, Miss Metcalf, of Letcher County, was awarded $1000; Miss St. Claire Pease, of Wooton, $500; Miss Hauswald, of the State Board of Health, Louisville, $250.

Dr. William Robert Parks, Harlan, and Miss Katherine Groseclose, Marion, Va., were married January 25.

(Continued on page 40)

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(Continued from page 38)

Dr. LaFayette Bennett, Central City, aged 47, died May 22 from meningitis.

Dr. Alexander Taylor Henderson, Ashland, aged 77, died April 23 at the King's Daughters' Hospital, as an indirect result of roentgen-ray burns.

Dr. David Johnson Wallin, Brooksville, aged 83, died April 20 from carcinoma.

Dr. George Jesse Ellis, Covington, aged 48, died April 28 at St. Elizabeth's Hospital from septicemia.

Dr. Hugh Nelson Leavell, Louisville, aged 49, died April 16 from septicemia and pneumonia.

Dr. George Marion Hendren, Bryantsville, aged 78, died April 14.

LOUISIANA

At the recent meeting of the Louisiana State Medical Society in Opelousas, the Louisiana Railway Surgeons' Association was reorganized and the following officers elected: Dr. Hermann B. Gessner, New Orleans, President; Dr. O. P. Daly, Lafayette, Vice-President; Dr. W. Bradburn, New Orleans, Secretary.

Dr. Hermann B .Gessner has been elected to fill a three-year term on the Journal Committee of the Louisiana State Medical Society.

The new North Louisiana Sanitarium, Shreveport, will be opened for patients in the near future.

At a recent meeting of the Charity Hospital Staff, New Orleans, a committee was appointed to investigate the problem of depoliticalizing the institution. Those appointed on the committee are: Dr. H. B. Gessner, Chairman; Dr. I. I. Lemann, Dr. E. H. Walet, Dr. H. W. E. Walther, and Dr. E. L. King.

The first of the additional buildings provided by Congress in February, 1923, to enlarge the National Leper Home at Carville has been completed, and twelve lepers temporarily detained elsewhere were moved to Carville in April. The appropriation provides additional beds for about 240 patients and increases the present capacity of the institution to more than 400.

Dr. H. O. Barker, sub-district Medical Officer of U. S. Veterans' Bureau, Shreveport, has recently been transferred to Hospital No. 27, near Pineville.

The new department of Middle American Research at Tulane University, New Orleans, will start work immediately on a translation of the Maya medical laws from Spanish manuscripts included in the William Gates Collection, recently acquired. An endowment of $300,000 is available for the expense of the Department in addition to the $75,000 paid for the Gates Collection. Medical knowledge of the Maya Indians, with their pharmacopeia of plants and their uses, will now be made possible through a university publication, the first to be sponsored by the new department.

The Mercy Hospital, New Orleans, dedicated to the memory of Leonce Soniat by his wife, was opened in March. The institution has a capacity for 100 patients, and is owned by the Sisters of Mercy. Mrs. Soniat paid $100,000 for the property. Dr. E. L. Leckert, City Health Officer, is Chairman of the Board.

Ground has been broken for the Tristate Sanitarium, Shreveport, a private hospital owned by Drs. Pirkle and Williams.

Deaths

Dr. Robert Moses Littell, Jr., Opelousas, aged 26, died May 12 from tuberculosis.

Dr. Charles F. Sauter, New Orleans, aged 50, died May 19.

MARYLAND

The annual meeting of the American Orthopedic Association was held in Baltimore, May 15-18.

The annual conference of the state health officers was held in Baltimore, June 6. The conference brought together all health officers in the state and others interested in health problems. The morning session was devoted to addresses on public health.

The Maryland Cancer Committee gave a dinner in Baltimore, May 9, in honor of Senator Royal S. Copeland, New York, after which a joint meeting of the Baltimore City Medical Society, the Baltimore City and the Maryland State Dental Associations and the Maryland Cancer Committee was held.

A committee of ten members charged with planning all present and future needs of the Johns Hopkins University

(Continued on page 42)

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Literature and samples to physicians on request

(Continued from page 40)

and Hospital was recently created. Three members each from the University and the Hospital Boards and four ex-officio members constitute the new committee.

The General Assembly of 1924 has appropriated $667,000 for the state hospitals for the insane and feeble-minded in the State. New structures will be erected at all state hospitals. Two wooden cottages at Springfield will be replaced by a building to cost $142,000, increasing the capacity of the hospital by fifty; at the Spring Grove Hospital a wing to the A. D. Foster Clinic to house 100 patients will be added at a cost of $225,000; an administration building will be erected at the Eastern Shore State Hospital at a cost of $150,000, adding 110 beds to the hospital; at the Crownville Hospital, a home for the Superintendent will be erected at a cost of $25,000; provision for 100 additional feeble-minded children will be made at the Rosewood State Training School by the erection of a dormitory at a cost of $100,000.

Dr. Mary Sherwood, Director of the Municipal Bureau of Child Welfare, Baltimore, has resigned, and will go to Christinia, Norway, as a delegate to the convention of the International Federation of University Women to be held the latter part of July. Dr. Sherwood organized the Bureau of Child Welfare in February, 1919.

The State Board of Medical Examiners has announced that the registration fee for those who enter the state by reciprocity will in future be $50.00. Each applicant for examination who has received his medical education out of the United States, in addition to giving evidence of satisfactory preliminary and medical training, shall have taken out his first naturalization papers.

Dr. H. J. Berkley, Baltimore, and Dr. George H. Hocking, Govans, have been reappointed to the Board of Mental Hygiene of Maryland to serve an additional six-year term.

Prof. Reynold A. Spaeth, Associate Professor of Physiology at the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, has accepted a three-year appointment as visiting professor of Physiology at the Medical School of Chulalongkorana, Bangkok, Siam.

Dr. F. H. Baetjer, Professor of Roentgenology, Johns Hopkins University Medical School, Baltimore, recently submitted to his fiftieth operation necessitated by roentgen-ray burns.

Deaths

Dr. John Ramsey Littlefield, Cumberland, aged 44, died April 24 from pneumonia.

Dr. William Miller Roberts, Baltimore, aged 51, died April 15 at Ruxton.

Dr. Thomas J. Ward, Ruxton, aged 79, died April 26 at the University Hospital, Baltimore, from senility.

MISSISSIPPI

At the annual meeting of the Mississippi State Association held in Jackson, May 13-15, Dr. Hugh H. Haralson, Forest, was elected President; Drs. William J. Anderson, Meridian, Charles A. McWilliams, Gulfport, and Daniel C. Montgomery, Greenville, Vice-Presidents; Dr. Thomas M. Dye, Clarksdale, Secretary; Dr. James M. Buchanan, Meridian, Treasurer.

Dr. Waller S. Leathers, Dean of the University of Mississippi School of Medicine, University, and President of the State Board of Health, has resigned. He has accepted a position with the Vanderbilt University Medical Department, Nashville, Tenn.

Deaths

Dr. William Dickson Redus, Port Gibson, aged 70, died April 21 from heart disease.

Dr. Elbert A. Cheek, Canton, aged 58, died February 1.

MISSOURI

At the annual meeting of the Missouri State Medical Association held in Springfield, May 6-8, Dr. William A. Clark, Jefferson City, was elected President; Drs. Clarence B. Francisco, Kansas City, Homer L. Kerr, Crane, Edward C. Shelton, Eldon, Elbert L. Spence, Kennett, and Jules M. Brady, St. Louis, Vice-Presidents; Dr. Edward J. Goodwin, St. Louis, Secretary; Dr. J. Franklin Welch, Salisbury, Treasurer.

At the sixth annual meeting of the Western Physiotherapy Association held at Kansas City, April 17-18, Dr. L. A.

(Continued on page 44)

A Marked Advance in Cardio-Renal Therapy

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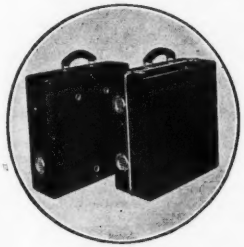

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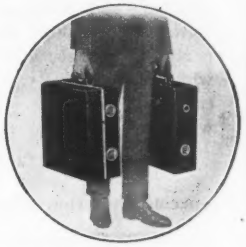

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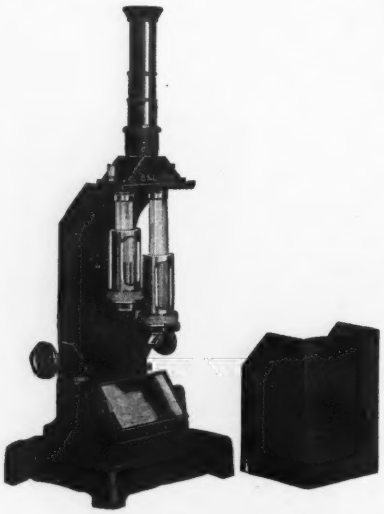

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(Continued from page 42)

Marty, Kansas City, was elected President; Drs. R. W. Fouts, Omaha, Neb., and W. P. Patterson, Springfield, Vice-Presidents; Dr. Charles Wood Fassett, Kansas City, Secretary; Dr. W. P. Grimes, Kansas City, Treasurer.

A two weeks' course of graduate work was held in St. Louis May 26-June 7. This was arranged by the St. Louis clinics for the visiting physicians.

The State Board of Health, in conjunction with the Department of Public Welfare of St. Louis and the Missouri Social Hygiene Association, conducted a social hygiene exhibit at St. Louis during the week of April 14-20.

In an agreement between City and St. Louis and Washington Universities, St. Louis will be zoned so that mothers and expectant mothers will be able to secure medical attention within a distance of ten blocks of their homes. The agreement followed a survey of the prenatal committee of the Community Health Council which covered all phases of maternal service and maternal and infant mortality for the year.

The annual "President's Night" dinner of the Jackson County Medical Society was given in Kansas City April 1. The occasion is for members of the Society to talk of past achievements and future undertakings.

The assistant physicians of the eleemosynary institutions of the State have formed an organization which will meet bi-monthly at the various institutions to discuss the problems that are met with in their work. Dr. D. H. Young, Assistant Physician at State Hospital No. 1, Fulton, was elected President, and Dr. B. T. Brown, Assistant Physician at State Hospital No. 4, Farmington, was elected Secretary.

The will of Mrs. Minnie Wood, recently filed in the probate court in St. Louis, provides $200,000 for the charitable institutions conducted by Dr. E. W. Saunders. The institutions are the Bethesda Hospital and the Bethesda Old Ladies' Home. The will also provides that a sum not exceeding $35,000 shall be used for purchasing a playground as a recreation park to be donated to the City of St. Louis, and to be known as the "Minnie Wood Memorial Square."

The first annual "Save Your Sight Day" was held in St. Louis, May 14, under the auspices of the Missouri Association for the Blind. Members of the Ophthalmic Section of the St. Louis Medical Society gave seven free clinics.

Dr. Russell L. Haden, Professor of Experimental Medicine, University of Kansas School of Medicine, was awarded the J. D. Griffith prize of $100 at the recent annual smoker of the Kansas City Academy of Medicine, for his paper on "Ocular Pathology Association with Dental Infection."

The medical credit bureau of St. Louis, recently organized by St. Louis physicians as an agency for collecting medical accounts and to loan money to patients to pay their bills, was granted a permit by the state finance commission to sell a $50,000 issue of stock.

The $900,000 Shrine Hospital for Crippled Children, St. Louis, was opened to the public April 13. The hospital will take care of eighty children in addition to its out-patient service. Dr. Leroy C. Abbott is Surgeon-in-Chief and Dr. Frederick A. Jostes, Resident Physician.

Dr. Eugene H. Bullock, Kansas City, has resigned as City Health Director.

Dr. Leo Loeb, Director of the Research Laboratory, Washington University School of Medicine, St. Louis, has been appointed Edward Mallinckrodt Professor of Pathology at the University.

Dr. Frank C. Neff, Kansas City, has been appointed Professor of Pediatrics at the University of Kansas School of Medicine, and Pediatrician-in-chief to the Bell Memorial Hospital, Rosedale, Kan.

Dr. J. F. Owens, St. Joseph, has been elected President of the Board of Health, succeeding Dr. H. W. Carle, resigned.

Dr. James M. Russell has been elected Mayor of Monett.

Dr. Floyd B. Dailey and Miss Cora Crawford, both of Mountain Grove, were married recently.

Deaths

Dr. William D. Drake, Bolivar, aged 48, died May 9.

Dr. Uriel S. Boone, St. Louis, died February 18 from pneumonia.

Dr. John Andrew Calnane, St. Louis, aged 59, died May 12 at St. Anthony's Hospital from pneumonia.

NORTH CAROLINA

The St. Joseph's Sanitarium, Asheville, will open its new wing in the near future. A staff has been organized for

(Continued on page 46)

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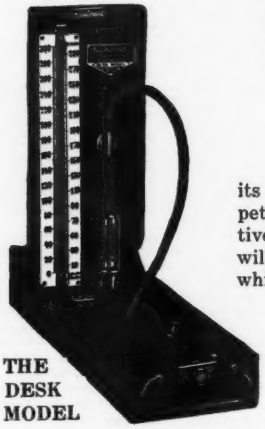

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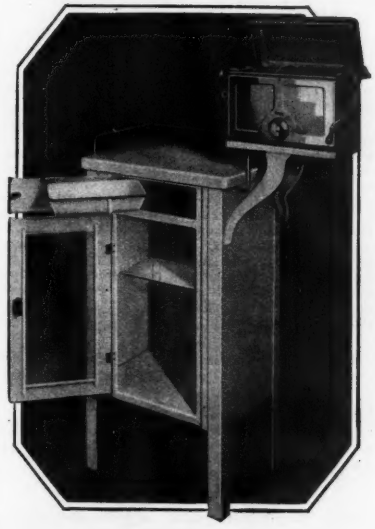

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(Continued from page 44)

the treatment of patients suffering from tuberculosis. The following are the officers of the staff members: Dr. C. P. Ambler, President; Dr. M. L. Stevens, Vice-President; Dr. R. C. Scott, Secretary. The staff consists of the following members: Drs. George Alexander, A. C. Ambler, C. P. Ambler, G. C. Battle, C. H. Coche, C. D. W. Colby, C. E. Cotton, A. L. Denchfield, W. L. Dunn, B. O. Edwards, Thompson Frazer, J. W. Huston, George S. Macpherson, C. L. Minor, C. C. Orr, Wilson Pendleton, Carl V. Reynolds, Paul H. Ringer, Robert C. Scott, M. L. Stevens and C. St. V. Zimmerman. The sanitarium will be in charge of the Sisters of Mercy.

The new Baptist Hospital, located on the site of the old Tranquil Park Sanatorium, Charlotte, will soon be opened. An addition is also being erected to the old hospital building. This will give the hospital a capacity of 106 beds.

A contract has been let for a new building for the Methodist Children's Home, Winston-Salem. The structure will be of brick and will contain twenty-eight beds.

An addition to the Lawrence Hospital, Winston-Salem, has been opened.

The Leaksville Hospital, being erected by Dr. Carl V. Tyner at a cost of $50,000 will soon be completed. It will accommodate 30 patients.

Dr. M. L. Ilsley, formerly Director of the Western Division of the State Board of Health, was recently appointed Professor of Hygiene and Preventative Medicine, Colgate University, Hamilton, N. Y.

The contract has been let for the erection of the first state prison sanatorium for the treatment of tuberculosis. The last legislature voted $50,000 for the erection and $37,500 for the maintenance of the institution. It will be built near the State Sanatorium, Sanatorium. It will be a four-story building and will be under the same supervision. All tuberculous prisoners in the state penitentiary, county jails and on the county roads will be sent to the institution.

Dr. J. C. Twitty, Rutherfordton, has been elected full-time Health Officer of Rutherford County.

Dr. Hume Lee Horton, Apex, and Miss Lucille Audrey Barnes, Richmond, Va., were married April 17.

Dr. Arthur Chase Ambler and Miss Mary Barber, both of Asheville, were married April 30.

Deaths

Dr. Henry Boyden Rowe, Mount Airy, aged 39, died May 16 following a long illness.

Dr. William D. Price, Sanford, aged 40, died March 6.

Dr. John Bunyan LeGwin, Wilmington, aged 39, died February 3 from uremia.

OKLAHOMA

Morningside Hospital, Tulsa, has recently completed a 21-room addition, which gives it a capacity of 80 beds.

Dr. R. C. Baker, Superintendent of Health, has organized a state health exposition in Enid.

Tulsa theaters have refused to page physicians attending the shows because some of them have taken advantage of the privilege to secure free advertising for themselves. In future each physician desiring to be paged will secure a number from the Secretary of the Medical Society which will be flashed on the screen when he is wanted.

More than 100 physicians, members of the Oklahoma County Medical Society, attended a "roll call" smoker March 22 at the Chamber of Commerce. At roll call each physician answered with a brief history of his medical career.

The Creek County Medical Society recently entertained the physicians of Payne County at a banquet at Drumright.

Dr. S. Ernest Strader has been appointed Secretary-Treasurer of the Oklahoma County Medical Society for the remainder of the year, taking the place of Dr. E. Lee Jones, resigned.

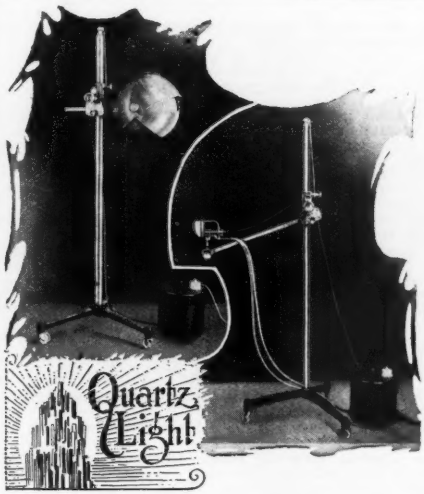
Dr. W. A. Lackey, Vice-President of the Oklahoma County Medical Society was recently re-elected School Physician for the coming two years.

Deaths

Dr. James B. Murphy, Stillwater, aged 68, died May 19.

Dr. John Joseph Chapman, Lawton, aged 67, died suddenly April 2.

(Continued on page 48)



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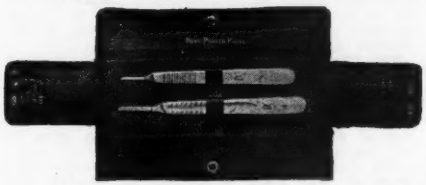

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(Continued from page 46)

Dr. Jasper Wayne Hensley, Okmulgee, aged 57, died April 30.

Dr. William C. Wingfield, Shawnee, aged 71, died May 11 following a long illness.

SOUTH CAROLINA

The Little Pee Dee Medical Society, composed of the counties of Marion, Horry and Dillon, was reorganized May 8. The following officers for the remainder of the year were elected: Dr. Z. G. Smith, Marion, President; Drs. J. H. Smith, Mullins, R. F. Elvington, Lake View, J. S. Dusenbury, Conway, Vice-Presidents; Dr. D. W. Green, Mullins, Secretary.

The South Carolina Nurses' Association held its seventeenth annual convention at Columbia in April.

A new department under the State Board of Health to care for the teeth of school children would be created by a bill introduced by Senators Wells, Williams, Butler and Stewart, which was recently passed by the Senate. The bill carries an appropriation of $25,000 for establishing the department and for maintaining dental clinics. When parents could afford it, a fee of 50 cents would be charged for treatment.

Deaths

Dr James Lane Napier, Blenheim, aged 80, died May 13 from cerebral hemorrhage.

Dr. Andrew Tazewell Baird, Darlington, aged 60, died April 24.

Dr. Thomas Jefferson Strait, Lancaster, aged 77, died April 17 from abscess of the lung.

Dr. Peter Brockington Bacot, Florence, aged 86, died April 25 from senility.

TENNESSEE

At the semi-annual meeting of the Middle Tennessee Medical Association held in Columbia May 15-16, Dr. H. H. Shoulders, Nashville, was elected President; Dr. J. C. Kelton, Lascassas, Vice-President; Dr. Sam P. Bailey, Nashville, re-elected Secretary-Treasurer. The next meeting will be held at Lewisburg.

The West Tennessee Medical and Surgical Association met in Jackson on May 22-23. The officers for the ensuing year are as follows: Dr. B. J. Gillespie, Covington, President; Drs. W. W. McBride, Gleason, and G. W. Oliver, Medina, Vice-Presidents; Dr. I. A. McSwain, Paris, Secretary; Dr. G. R. McSwain, Paris, Assistant Secretary. The next meeting will be held in Paris.

The following are the Tennessee State Board Medical Examiners: Dr. W. L. McCreary, Knoxville, President; Dr. A. B. DeLoach, Memphis, Secretary; Dr. H. W. Qualls, Memphis, Benjamin L. Simmons, Nashville, F. W. Hulme, Pulaski, J. W. Ogle, Sevierville.

The Child's Free Clinic, Knoxville, has withdrawn from the Knoxville Health Center because they felt they could do a greater work by being to themselves. The Knox County Medical Society is giving the Clinic its support.

The Baptists of the State are making plans for the erection of a new hospital in Nashville. A drive for funds will begin shortly.

The University of Tennessee has contracted for the purchase of large tracts of ground on Dunlap and Union Streets, Memphis, at a cost of more than $300,000. The dental and medical departments will be transferred to these plots.

Dr. W. R. Wallace announces the completion of a 25-room addition to his sanitarium and also the change in the firm name from the Wallace-Somerville Sanitarium to the Wallace Sanitarium. Dr. W. G. Somerville is visiting consultant at the sanitarium.

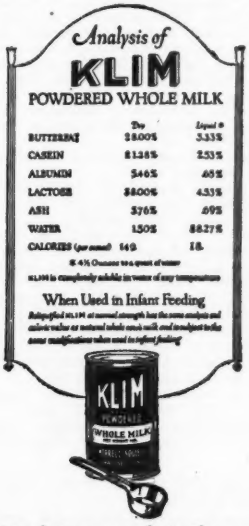
A nurses' home will soon be erected at the Erlanger Hospital, Chattanooga, at a cost of $175,000.

The Beverly Hills Tuberculosis Sanitarium, Knoxville, was formally opened May 24. The money for this sanitarium was subscribed by the citizens of Knoxville.

The necessary $40,000 to erect the proposed community hospital at Dayton has been subscribed. One-half of this amount was subscribed by Mr. A. P. Haggard as a memorial to his wife, Rena Clark Haggard, now deceased. The remainder was subscribed by the citizens and physicians of Rhea County.

An infirmary and children's building at Oakville Memorial Sanatorium, Memphis, will soon be erected at a cost of $115,000.

(Continued on page 50)



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KLIM simplifies infant feeding because:

When reliquefied it is the same in composition as natural milk.

It is a safe milk, free from pathogenes.

It is easily digested due to the flocculent casein and fine butterfat globules, reducing the possibility of colic, and other nutritional disturbances.

It is easy to prepare correctly. Prepared only as needed, lack of ice is no hindrance or danger.

Natural milk may be subject to many variations in purity, acidity and butterfat content, but KLIM is invariably the same.

Literature and samples sent promptly upon request.

MERRELL-SOULE CO., Syracuse, N. Y.

Also Makers of Merrell-Soule Powdered Protein Milk

Intestinal antisepsis is indicated in all putrefactive and fermentative conditions of the intestinal tract.

Creosote is a valuable intestinal antiseptic but its use is limited because its administration often meets with objections on the part of the patient.

Calcreose overcomes objections. It contains 50% creosote but the creosote is released slowly hence is absorbed without apparently causing any distress.

Literature and Sample of Calcreose Tablets on Request.

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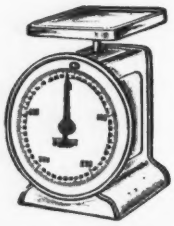

DIETETIC SCALE, $10.00

Capacity, 500 Grams by 2 Grams

Sturdily constructed, sanitary, accurate, can be readily carried from room to room, as platform and post slips in bottom of scale. Easy to use. Place dish on platform and rotate dial until "0" is exactly under end of pointer. Place helping of food on plate until proper number of grams is registered. Again rotate dial until "0" is under end of pointer, and weigh another portion of food on the plate. No computation or deduction for tare. Porcelain top. White enamel washable body and dial. Used by hospitals and sanitariums, as well as by individuals.

We are prepared to equip completely laboratories for the purpose of doing Blood and Urine Chemical Analysis.

Let us submit our list of Apparatus, Chemicals and Solutions for your approval.

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Surgical Instruments, Hospital, X-Ray and Laboratory Supplies

BIRMINGHAM, ALA.

(Continued from page 48)

Dr. Waller S. Leathers has resigned as executive officer of the Mississippi State Board of Health and accepted the appointment of Professor of Preventive Medicine, Vanderbilt University Medical Department, Nashville. He will take up his work in Nashville following a year in Europe.

Dr. Hugh J. Morgan, Resident Physician at the Hospital of the Rockefeller Institute, New York, and Dr. Charles S. Burwell, Instructor in Medicine, Johns Hopkins University Medical Department, Baltimore, have been appointed Associate Professors of Medicine at the Vanderbilt University, Nashville.

The Maury County Hospital (colored) was opened at Columbia recently.

At the recent meeting of the surgeons of the Southern Railway held at Jacksonville, Fla., Dr. J. T. Leeper, Lenoir City, was elected Vice-President.

Dr. Herbert Acuff, Knoxville, has been elected President of the Chamber of Commerce.

Dr. Fred C. Watson, Memphis, has accepted a position with Cuyarnel Fruit Company, Puerto Cortez, Honduras.

Dr. H. K. Cunningham has been re-elected Medical Inspector of the Knoxville city schools.

Dr. Marcus Haase, Memphis, has been re-elected President of the Council of Social Agencies.

Dr. Fred Cameron McIsaac and Mrs. Ada Strang Denton, both of Chattanooga, were married April 30.

Dr. John Joseph Greer and Miss Marie Parker, both of Knoxville, were married April 22.

Dr. Irving Simons and Miss Mary Burns Pugin, both of Nashville, were married April 30.

Deaths

Dr. James Otis Hardin, Spring Hill, aged 84, died in April from senility.

Dr. James E. Green, Chattanooga, aged 62, died in April.

Dr. Samuel G. Breeden, Decatur, aged 75, died May 11.

Dr. George Weeks Hale, Nashville, aged 76, was found dead in bed April 28 from heart disease.

Dr. John Edgar Humphreys, Conkling, aged 56, died April 21 from cerebral hemorrhage.

Dr. Charles M. Lane, Brick Mill, aged 50, died suddenly April 19 from heart disease.

Dr. Luther Franklin Ferguson, Gates, aged 55, died May 2 at a hospital in Dyersburg, following an operation for peritonitis.

Dr. Finis E. Wyatt, Yorkville, aged 52, died May 14 from pernicious anemia.

Dr. Edward A. Quinn, Cleveland, aged 69, died May 6 following a long illness.

TEXAS

At the annual meeting of the Texas State Medical Association in San Antonio, April 29-May 1, Dr. Charles M. Rosser, Dallas, was elected President; Drs. Philip H. Chilton, Comanche, John W. Gidney, West, and Silas J. Alexander, Hearne, Vice-Presidents; Dr. Holman Taylor, Fort Worth, Secretary-Editor. The dues were raised from $5.00 to $15.00 in order to provide a publicity and educational fund. The next meeting will be held in Austin.

The Texas Society of Orthopedic Surgeons was organized April 30. Dr. Edward A. Cayo, San Antonio, was elected President; Drs. W. B. Carroll, Dallas, and S. D. David, Houston, Vice-Presidents; Dr. J. R. Bost, Houston, Secretary-Treasurer.

The annual meeting of the State Pathological Society met in San Antonio April 28. Dr. B. F. Stout, San Antonio, was elected President; Dr. A. H. Braden, Houston, Vice-President; Dr. W. W. Coulter, Houston, Secretary.

The Dallas Baby Camp and Hospital will be erected in Dallas at a cost of $50,000.

The State Tuberculosis Sanatorium will soon have a new woman's dormitory, the appropriation for which is $25,000. When completed it will accommodate 30 patients. There will also be an addition to the library which will provide an auditorium seating 500 people. The appropriation for the library addition is $14,000. These additions will increase the sanatorium's capacity to 355 patients. In 1925 a men's dormitory costing $70,000, and accommodating 72 patients, will be built. Dr. J. B. McKnight is Superintendent.

A modern City-County Hospital will be built in Sulphur Springs sometime in the near future.

An addition to All Saint's Hospital, Fort Worth, which will cost approximately $150,000, will be erected at Magnolia and Eighth Avenue.

(Continued on page 52)

SUPERLATIVES ARE UNNECESSARY— WILD STATEMENTS UNCALLED FOR.

Pediatricians, Physicians and Nurses know that when speaking or writing about a product such as DRYCO whose very name has a high valuable significance to them, there is no necessity for the use of superlatives, nor to make wild statements.

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DRYCO supplies the food solids from pure fresh cow's milk.

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ITS butter fat is in a condition so that it is readily absorbed.

IT is free from all harmful bacteria, and

ITS vitamin content is preserved.

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Can be obtained by the use of "M-E-S-Co" brand of Ophthalmic Ointments. **Reasons: Selected Chemicals, Thorough Trituration, Perfect Incorporation, Sterilized Tubes, Boiled and Strained Petrolatum, Excellent Service, No Waste, No Dirty Salve Jar, Right Prices.** Write for complete information.

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$2.00 BRINGS IT TO YOU
BLOOD PRESSURE MANUAL
Employing Nature's Immutable Law Insures Absolute Accuracy
The unfailing reliability of gravitation method made use of. The scale of every instrument individually hand calibrated, another fundamental of scientific accuracy. Cannot spill; no air-pockets. The variation of other instruments of 10 to 30 mm. impossible.
10 DAYS TRIAL
Dr. Janeway, Johns Hopkins, Recommends It
Rockefeller Institute, Mayo Clinic, Yale and Harvard Medical Schools and many others use it. Metropolitan Life Insurance Co. bought 1000. Portable desk model (14½x4¾x2½ inches). With Free Manual.
10 DAYS' TRIAL—EASY TERMS
Send just $2.00 and we will forward it to you at once. Try it. If not thoroughly satisfied return and get your money back. If perfectly satisfied, send the balance in ten monthly installments of $3.00 each; without interest—$32.00 in all complete, which is the regular cash price everywhere.
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A. S. ALOE CO., 521 OLIVE ST., ST. LOUIS, MO.
I enclose first payment, $2.00. Send Baumanometer complete on 10-days' trial. If I keep it, I will pay balance, $30.00, in 10 monthly payments of $3.00, without interest. I agree title remains in you until paid in full.
Name.....
Address.....

(Continued from page 50)

The contract has been let for a new County Hospital building at Hereford.

Free summer clinics, open to regular medical practitioners of Texas, were conducted at the University of Texas Department of Medicine, Galveston, May 26-June 7.

Dr. David L. Bettison, Dallas, was elected President of the Baylor Medical Alumni Association at a meeting in San Antonio April 29.

Dr. Arthur C. Scott, Temple, has resigned as a member of the State Board of Health.

General Frank T. Hines, Director of the Veterans' Bureau, Washington, has announced the renewal of the Bureau's contract for the use of the American Legion Memorial Sanatorium, Kerrville. The new lease will begin July 1, and the annual rental is $67,500.

Dr. E. C. Hancock, Arlington, has been elected as the official physician for the Home for Aged Masons, Arlington.

Dr. William E. Lucey, Cleburne, has resigned as City Health Officer.

Dr. Richard McCormick, Waco, has been appointed full-time Health Officer of McLennan County.

Deaths

Dr. William C. Cullom, Mesquite, aged 81, died April 23.

Dr. Edward W. Snyder, Brownwood, aged 70, died recently from senility.

Dr. Samuel H. Windham, Tahoka, died April 21.

Dr. Eliphas Lawrence Linder, Tennessee Colony, Tex., aged 65, was found dead in bed April 22.

Dr. Harry Leroy Leap, San Antonio, aged 48, died April 26 from heart disease.

Dr. Archie E. Cearnel, Indian Creek, aged 67, died March 26 from pneumonia.

Dr. Charles P. Brewer, Fort Worth, aged 67, died April 12 from pneumonia.

Dr. Lloyd S. Downs, Waco, aged 67, died May 11 following a long illness.

Dr. John W. Vermillion, Sinton, aged 72, died November 26 following an operation.

VIRGINIA

At the annual meeting of the Virginia Public Health Association held in Richmond recently Dr. William S. Keister, Charlottesville, was elected President; Drs. Aubrey Straus, State Bacteriologist, Richmond, and William R. Culbertson, Norton, Health Officer of Wise County, Vice-Presidents; Dr. Lonsdal J. Roper, Director of Public Welfare, Portsmouth, re-elected Secretary-Treasurer.

South Piedmont Medical Society has elected Dr. Ray A. Moore, Phenix, President; Drs. F. O. Plunkett, Lynchburg, C. L. Bailey, Danville, J. D. Hagood, Scottsburg, and L. H. Hoover, Clarksville, Vice-Presidents; Dr. George A. Stover, South Boston, re-elected Secretary-Treasurer.

At the fifth annual meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, held at Lynchburg recently Dr. James Morrison, Lynchburg, was elected President; Dr. H. S. Hedges, Charlottesville, Vice-President; Dr. E. U. Wallerstein, Richmond, re-elected Secretary-Treasurer.

The Virginia-West Virginia section of the American College of Surgeons was held in Richmond, May 2-3. In the Virginia Section, Dr. Clarence Porter Jones, Newport News, was elected Chairman; Dr. J. E. Rawls, Suffolk, Secretary; Dr. H. H. Trout, Roanoke, Councilor. In the West Virginia Section, Dr. G. C. Schoolfield was elected Chairman; Dr. J. E. Cannaday, Secretary, and Dr. H. G. Nicholson, Councilor. All of Charleston.

Lee County Medical Society has elected Dr. T. B. Ely, Jonesville, President; Dr. J. B. Muncy, Jonesville, Secretary-Treasurer.

The annual meeting of the State Dental Association was held in Norfolk recently. Dr. A. Hume Sprinkle, Staunton, was elected President; Dr. W. N. Hodgkin, Warrenton, Secretary.

The Society of Sigma XI was recently installed at the University of Virginia for the promotion of scientific research.

The Graduate Nurses Association of Virginia are trying to raise $50,000 to endow a chair of nursing at the University of Virginia Medical School, Charlottesville. Two courses are planned, one for graduate students, and the other for undergraduates.

The Board of Directors of Winchester Memorial Hospital has been reorganized and enlarged. It includes about

(Continued on page 54)

Your Patient's Recreation

cannot accomplish its greatest good, if his nervous system is being subjected to the slightest irritation or depressing influence. Wearing

O'Sullivan's Heels

removes a source of irritation that, once unknown, is now recognized as an all too often factor in retarding convalescence — the repeated jarring of the body by walking with solid leather heels on hard unyielding floors and walks.

In ordering recreation and outdoor living for weak and convalescent patients, the aid that O'Sullivan's Heels will give should not be overlooked.

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insure potency and constancy of action by prescribing the products of

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Manufacturers of Organotherapeutic Products

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(Continued from page 52)

75 business and professional men representing the City of Winchester, and the Counties of Frederick, Clark, Warren, Rappahannock, and Shenandoah of Virginia, and Hardy and Hampshire of West Virginia. New officers elected are Dr. Hunter H. McGuire, President; Mr. C. W. Trenary, Vice-President; Dr. J. E. Harris, Secretary-Treasurer.

The proceeds from pageants held in various cities of Virginia by the foundation fund committee of the Graduate Nurses' Association on Florence Nightingale Day, May 12, will go toward a $50,000 fund which the Association has pledged to raise for endowing a chair of nursing at the University of Virginia.

A charter has been issued for the Northampton-Accomac Memorial Hospital now under construction at Nassawadox, as a memorial to the men from the eastern shore of the state who served in the World War. The building will cost $85,000.

Dr. J. A. Hart, Acting Assistant Surgeon in the U. S. Public Health Service, has been transferred from Hampton Roads Quarantine Station to Marine Hospital No. 1, Baltimore, Md.

Dr. Ennion G. Williams, Richmond, has been reappointed Commissioner of Health of Virginia for another period of four years.

Dr. Emmett H. Terrell, Richmond, has been elected a member of the Board of Directors of the Rotary Club.

Miss Martha V. Baylor, formerly Superintendent of St. Luke's Hospital, Richmond, has been appointed Director of Public Welfare of Richmond, as Superintendent of nurses in the Health Bureau.

Dr. H. R. Edwards, clinician to the Bureau of Tuberculosis Education with the State Board of Health, has resigned to accept a position as Medical Field Secretary with the National Tuberculosis Association, with headquarters at New York. Dr. E. C. Harper, formerly of Fries, succeeds him.

Dr. Joseph Grice, former City Bacteriologist of Portsmouth, has been elected Medical Inspector in the School System, to succeed Dr. E. A. Hatton, who died recently.

Dr. J. N. Barney, Fredericksburg, Major in the Medical Section of the Officers' Reserve Corps, has been selected by the War Department as one of the seven reserve officers in the United States to report for duty at Mitchell Field, Long Island, to take a special course of instruction as advanced flight surgeon in the U. S. Air Service.

Dr. Emily Gardner, Richmond, has accepted the position as Assistant Director of the Child Welfare Bureau of the State Board of Health, and will assist in holding clinics in the various counties of the State.

Dr. Roshier W. Miller, Richmond, has been re-elected Vice-Chairman of the City School Board.

Dr. A. C. Byers, Harrisonburg, was elected President of the Hereford Breeders' Association of Virginia at its recent annual meeting.

Deaths

Dr. William St. Clair Gordon, Richmond, aged 66, died April 23 from pernicious anemia.

Dr. Hugh Benjamin Mahood, North Emporia, aged 53, died suddenly April 24.

Dr. Edward Julian Moseley, Sr., Richmond, aged 86, died April 22 from senility.

WEST VIRGINIA

At the fifty-seventh annual meeting of the West Virginia State Medical Association held in Wheeling in May Dr. George D. Jeffers, Parkersburg, was elected President; Drs. William T. Morris, Wheeling, and Charles B. Wylie, Morgantown, Vice-Presidents; Dr. Delivan A. MacGregor, Wheeling, Secretary; Dr. Hugh G. Nicholson, Charleston, Treasurer. The next meeting will be held in Bluefield.

A new three-story building will soon be erected at the Oak Hill Hospital, Oak Hill.

Dr. John Thames, with the Health Department in Little Rock, Ark., has taken up county health work in Kingwood, under the State Health Department cooperating with the U. S. Public Health Service.

Dr. E. M. Tanner, formerly of Bramwell, is now connected with the staff of the Bluefield Sanitarium, Bluefield.

Dr. F. G. Pettit has been appointed Superintendent of Hopemont State Tuberculosis Sanatorium, Hopemont, succeeding Dr. Elijah E. Clovis, who resigned.

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For so serious a procedure as intravenous injection Standardized solutions are absolutely essential.

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You appreciate the vital importance of pure and fresh drugs—drugs that are prepared and packed under certain government regulations.

How about foods? Aren't they just as important? Take baking powder, for instance—it is useful only when it produces its maximum of leavening strength in the baking. Leavening efficiency means light, wholesome breadstuffs—bakings that are easily digested, which in turn aid towards perfect health. Lack of leavening strength means flat and soggy bakings which are surely indigestible.

The pure food laws of our country have standardized baking powder—they require that it contain 12% leavening gas at the time of sale to the consumer. Why is it that these laws have not been applied to baking powder when mixed with flour and sold in cotton sacks?

Thousands of barrels of self rising flour are annually sold in our southern states without regulation by pure food measures, with the exception of Texas.

Any grade of flour and any quality or strength of baking powder can be used in so-called self rising flour mixtures and sold to the unthinking public without official criticism or regulation.

Numerous baking and laboratory experiments have been conducted by state chemists and other investigators. They found a surprising amount of this mixed flour to be so deteriorated as to be productive only of heavy, soggy bakings.

Do you want your patients to eat foods made from self rising flours that do not contain the necessary leavening strength—foods that are hard to digest and a detriment to health? Do you want the law to protect the consumer in this instance as it protects the user of drugs? It is for you and others interested in public health to decide.

Remember Calumet Baking Powder meets every requirement of the law—that it retains its great leavening strength to the last spoonful. Packed in tin—keeps the strength in.

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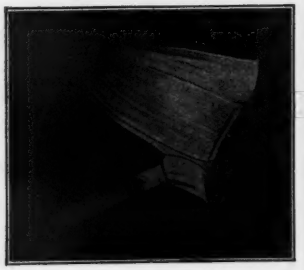

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ACRIFLAVINE has been shown to be a more powerful antiseptic, in serum, than bichloride or phenol.

SOLUTABS ACRIFLAVINE P-M CO are superior to other forms of the chemical for medicinal use, in that

They are more quickly soluble.
They permit use of freshly made solutions.
They yield solutions of accurate strength.
They avoid staining hands or clothing in making solutions.

Each Solutab contains Acriflavine 1-37/100 grs., making 3 ozs., of solution 1:1000 (proper injection strength) or 1 pint of solution suitable for lavage.

Acriflavine in dilution of one part to 300,000 of protein-containing media, has been shown to inhibit the development of Gonococci: in proper strengths it is practically non-irritant and does not decrease phagocytic action. Its results in Specific Urethritis are superior to the generally used antiseptics. It is indicated in a wide range of conditions caused by pathogenic organisms.

Solutabs Acriflavine 1-37/100 grs., P-M Co are hand-moulded, disintegrate quickly and dissolve readily. Supplied in packages of 5 tubes of 10 tablets each. Write for literature.

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PREVENTING NUTRITIONAL DISTURBANCES IN INFANTS

By far the largest majority of children that are brought to hospitals suffering from severe nutritional disturbances are victims of serious errors made by parents who failed to consult their physicians, and who attempted to feed their babies without a doctor's advice.

If all babies were under a competent physician's care, infant mortality would be surprisingly reduced.

MEAD JOHNSON AND COMPANY realize that the *physician is the only one capable of feeding babies successfully.* MEAD'S INFANT DIET MATERIALS, therefore, have no directions on the package, the mother gets her feeding instructions *only* from her doctor and follows his advice throughout the feeding period.

MEAD'S DEXTRI-MALTOSE, Fresh Cow's Milk and Water will give gratifying results in feeding a large majority of bottle babies.

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Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

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The complete package contains three 5-cc vials of Pollen Extract (Nos. 1, 2 and 3), No. 2 being ten times as concentrated as No. 1, and No. 3 ten times as concentrated as No. 2. The physician is thus enabled to begin with a small dose and increase gradually, most of the diluting necessary having been done beforehand by the manufacturers. A vial of diluent is supplied for giving bulk to very small doses, such as 0.1 cc and for use in applying differential resistance tests.

Vial No. 3 can be used in diagnosis; or a special diagnostic package can be ordered containing five capillary tubes of extract—enough for five tests.

Your dealer will order for you. Shall we send you our booklet on Pollen Extracts?

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